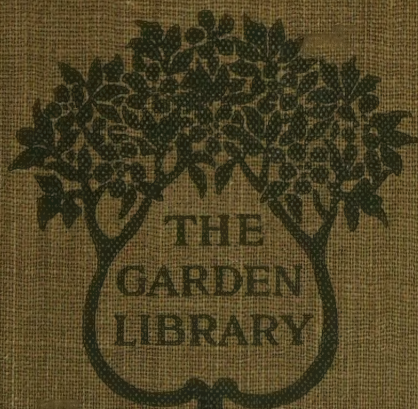
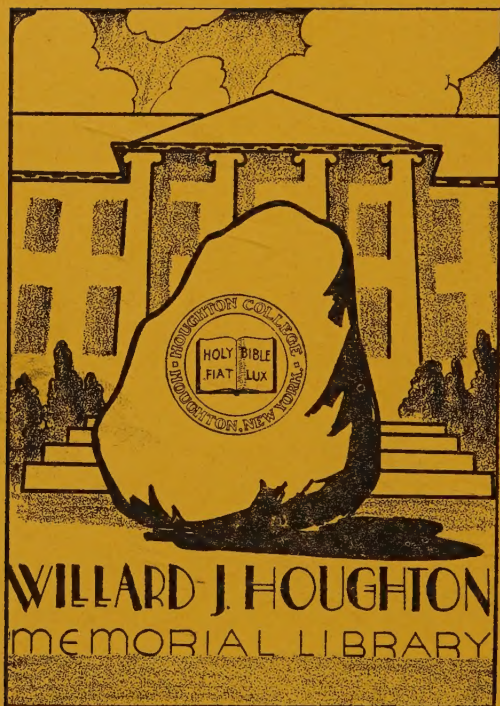


ROSES





Gift of Charles Wray.

The Christian student must be acquainted with a wide span of literature, including much of the worthy and some of the unworthy.

The Christian student recognizes that an enemy has sown tares in the wheat of God's truth.

Inclusion of this book in the library does not imply endorsement by Houghton College. The student must prove all things, holding fast the good; the teacher must rightly divide and interpret all in accordance with Holy Scripture.

9774

ROSES



The Rambler hybrids are unsurpassed for house or pillar decoration.
This is the Dawson, with bright pink flowers, produced in June

ROSES

AND HOW TO GROW THEM

*A Manual for Growing Roses in the
Garden and Under Glass*

ILLUSTRATED



GARDEN CITY NEW YORK
DOUBLEDAY, PAGE & COMPANY

1914

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PREFACE

ALL that is really necessary for the amateur rose grower to know in order that he may intelligently make a rose garden, select his varieties and grow the harvest of bloom, is told in this volume. Many books on the rose are more bulky, but the additional matter is not of an essential character. In this volume everything not directly to the point of practical rose growing for the American amateur is omitted.

The writings of several expert amateur rosarians which have appeared in *The Garden Magazine* and *Country Life in America*, have been drawn upon freely in the preparation of the text; notably articles by Dr. Robert Huey and Mr. Aaron Ward for the outdoor cultivation. Mr. Leonard Barron provides the chapters on "Roses for Special Purposes" and "Roses Under Glass"—excepting the section dealing with American Beauties, which is by Mr. Henry Hentz, Jr.

Acknowledgments are due to Prof. B. M. Watson for information on propagation; and to Professor Slingerland for information on insect pests; Prof. Byron D. Halsted is quoted on fungous diseases. Suggestions have also been received from Mr. L. B. Craw and from Mr. J. A. Payne, in regard to greenhouse construction, and from Mr. George H. Peterson in regard to the application of natural and artificial fertilizers.

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ROSES

ROSES

CHAPTER I

WHEN, WHERE AND HOW TO PLANT

The site—Best exposure—Making the best of other conditions—Why low ground is to be avoided—The soil—Must be well drained—Preparation of the soil—Manure—Laying out the beds—Preparing to plant on a lawn—Soils for different groups—Treatment of newly arrived plants—Spring planting best—How to plant—Budded or own-root plants—Planting from pots.

THE ideal site for a rose garden is airy but sheltered (especially from the biting winds of winter), open to the sun some part of the day, quite free from the influence of large or growing trees, and preferably a little above the general level of the rest of the garden. It must not be the lowest spot. A southern exposure is desirable, and, if it is necessary to make a choice, the morning sun is best. Partial shade will do less harm to dark-red roses than to roses of other colours. Some

protection from high winds is good, but not at the cost of having a close, stuffy location.

The beginner in rose growing will do well to weigh carefully the advantages and disadvantages of available sites. The soil may be poor and unsuitable. We can change that by taking away the present soil and filling in with soil from the meadow. Drainage and shelter can be provided, but if an error has been made in the site, all these accessories will avail little.

Low grounds are more subject to late spring frosts than adjacent places only a few feet higher, and late spring frosts are much to be dreaded after the tender shoots of the rose bushes have put forth. While shelter from high winds is very desirable, it must not be secured by trees whose roots can reach the beds. The roots of growing trees may be regarded as spreading from the trunk for at least a distance equal to the height of the tree. Thus if a tree is sixty feet high the rose bed should be at least that distance away; if nearer, the tree roots will revel in the enriched soil of the bed and appropriate the food needed for the roses. If the bed must be made nearer than this it may be protected



TO MAKE A ROSE BED

Dig three feet deep; throw away the bad soil; put in broken bricks or stones for drainage; then some inverted sods; then alternate layers of well-rotted manure and loam; finally a foot of loam. When planting spread the roots and work the soil thoroughly

from encroachment of the tree root by sinking a four-and-one-half-inch brick wall below the bottom of the bed and building up to near the surface. But this is troublesome and expensive. A fence of hemlock plank will do well for some years, but the roots will eventually find their way through.

It is not to be inferred that roses will grow only under these ideal conditions. Reasonably good plants and blooms can be attained in much less favorable situations. Many village gardens containing only a few feet of ground, and shaded for at least half of the day, yield flowers that are a delight to the growers and their friends; but happy is he who has the opportunity of selecting the best place for a rose garden and does it.

THE SOIL AND WHEN TO PREPARE IT

The best soil is a deep loam. Well-drained ground is essential and the site should never before have been used for roses, unless fresh earth is substituted for the old.

Roses abhor wet feet, and if the soil is wet it must be thoroughly drained. This can usually be accomplished by digging out the bed to a depth of three feet and filling in one

foot with broken stone, bricks, cinders, gravel, or anything that will permit a free passage of water.

If this is not sufficient and the water is not carried away quickly, provision must be made for this by tile draining, but except in very extreme cases, the drainage before mentioned will be sufficient.

At least three months before planting—to allow time for settling—the soil for the beds should be dug to the depth of two feet and liberally enriched with well-rotted manure; preferably with cow manure, though horse manure is good.

MAKING BEDS

The size which the beds shall be made is governed by the certain considerations of convenience in after years. All the bushes must be readily reached without leaving the walks; the surface of the beds must be accessible in every part for frequent cultivation, and the expense and labour of cultivating unnecessary space should be avoided.

With the exception of the climbers and the Rugosas (which ought not to be planted in the beds at all), a space of twenty-one inches

from plant to plant is sufficient to meet the above requirements. Accordingly rose gardens are usually laid out in parallelograms of any length, but with the width limited to five feet. Such a bed should contain three parallel rows, twenty-one inches apart, the outer rows twelve inches from the edge. The paths between beds should be not less than five feet in width, to admit of the passage of the water barrel. If more space is available, this width of path, as well as the space between the individual plants, could be increased to advantage. The paths look best if in grass, but well-rolled cinder paths are good and save troublesome weeding. They are the best for wet weather.

Beds for Hybrid Perpetuals made with a width of four feet will usually be found most satisfactory, as a double row can be planted at intervals of two and a half feet, which will be sufficient space for the strongest-growing varieties, and the beds can be worked and the blooms gathered without the necessity of trampling the soil.

Space may be economised by setting the plants not directly but diagonally opposite each other. They will then be one foot from

the edge and thirty inches apart, and each plant will be fully exposed to the light and air and will not interfere with its neighbours.

For Teas and Hybrid Teas the width of the bed may profitably be reduced to even three feet. The plants can be set eight inches from the edge and two feet apart, which will be ample space.

MAKING A BED ON THE LAWN

In preparing a bed on a lawn the sod and soil should first be entirely removed and placed apart. The best of the subsoil should then be taken out and placed on the opposite side of the trench, and finally the portion to be discarded, making in all a depth of at least two feet. The floor should be loosened up to the full depth of a pick-head, the good subsoil replaced and mixed with a generous dressing of well-decomposed manure (preferably that from a cow stable). Lastly the sod should be well broken up and the top soil also thoroughly enriched with manure, and the bed filled with good unmanured top soil to about two or three inches above the adjoining surface, enough good soil being added to

replace the discarded earth. When the bed has settled, the surface should be one inch below that of the adjoining sod, in order that all rainfall be retained. It is a grave error to make a rose bed higher than the adjacent surface, as in hot weather the soil dries out and the plants suffer for want of moisture. If possible, the bed should be made several weeks in advance of planting, to allow time for settling.

SPECIAL SOILS TO BE PROVIDED

The different classes of roses have different soil requirements, and wherever the best flowers are sought the beds should be prepared each for one class rather than mixing all classes indiscriminately. The Hybrid Perpetuals require a heavy soil containing some clay—what is known as a heavy loam answers admirably—and if this can be obtained from an old pasture where the growth has been luxuriant, nothing could be better. The top spit should be taken with the grass roots and chopped into very small pieces, care being taken to bury the grass roots several inches deep to prevent the possibility of growth. We want the humus they contain for the roses.

For Teas, Hybrid Teas, Noisettes and Bourbons a lighter, warmer soil is desirable. Three-fourths of the compost already described, into which about one-fourth of sand and leaf-mould has been thoroughly mixed, will be found entirely satisfactory. It is important to remember that all the manure should be incorporated with the lower two-thirds of the soil. The upper third should not contain any recently added manure, as this will rot the roots of the new plants, which should be covered with fine, friable soil. When growth begins the roots attract the rich moisture from beneath and appropriate it as it reaches them, without any danger of the roots being burned by fermenting manure.

The beds or borders may be edged with either stone, terra-cotta, cement coping, or planted with a border of some close-growing herbaceous plants, such as funkia or some varieties of lychnis or dianthus. But still better, for edging rose borders and other flower beds in permanent flower gardens, is the old-fashioned boxwood. The stone edge, or anything related to it, will be avoided by the artistic gardener. The beds being prepared, we are ready for the planting.



KILLARNEY

The best Hybrid Tea rose. Blooms large, pale pink, shaded deeper



SUZANNE MARIE DE RHODOCANACHI

One of the best Hybrid Tea roses. Deep French pink, a unique colour



ETIENNE LEVET

H. P. Fine carmine red, large and of good form, but a shy bloomer



ULRICH BRUNNER

The most satisfactory H. P. Cherry crimson, large size, develops all blooms well

FOUR FIRST-CLASS GARDEN ROSES

WHEN TO PLANT

Hybrid Perpetuals and Rugosas may be planted in early November, and one need not hesitate to plant most of the Hybrid Teas and the hardier Teas at the same time if prepared to protect them properly after the first frost. But, as a rule, spring planting of roses gives the most satisfactory results in the end. The Hybrid Perpetuals and Rugosas should be planted just as soon as the soil is in suitable condition and the frost out of the ground, usually about March 25th in the vicinity of New York. All others are best planted after April 20th, when the danger of sharp frosts is past.

HANDLING NEWLY ARRIVED PLANTS

If the plants arrive in a shrivelled condition, soak them thoroughly in water and bury them completely in a trench, again soaking them with water. Uncover after three days and they will usually be found revived. If the plants arrive in wet weather, or when the ground is frozen, do not open the box, but place it in a barn or other dry place where there is no artificial heat. Cover it with matting or blankets if the weather is cold.

When the weather is dry and conditions fit for planting, unpack the roses in a place sheltered from the wind and sun. From this time on it is absolutely necessary to avoid undue exposure of the roots. In sorting out the varieties while still under cover, use old mats or straw to keep the roots covered.

With the tender varieties, dormant planting out of doors is attended with much risk because of the inability of these plants to endure our rigorous winters before becoming established. Consequently, they need much more protection than the hardy sorts. Where the thermometer reaches 15° below zero it is better to defer planting until the early spring, provided the plants can be safely housed during the winter. This can be done by digging a pit about fifteen inches in depth in a dry, cold cellar or outhouse and packing the dormant plants in it, covering roots and tops with fine earth. After one good soaking with water they may be safely left until early spring unless they become *very* dry, in which case they may be watered again. After the plants become firmly established, which will be in one season, there is much less likelihood of their being injured by the cold.

Tender roses, planted on or about April 20th, may have thrown over them a few loose handfuls of old hay, or other light covering, to protect from possible late frosts and from the glare of the sun. After about ten days this shelter may be removed. The hardy roses do not need even this.

HOW TO PLANT

It is best to unpack the plants under the cover of some convenient shed, and to take to the beds, at one time, no more than can be properly protected nearby or promptly planted. During this move some people protect the roots by dipping them in mud; others carry the plants about in pails with the roots immersed in water. All these precautions are taken to avoid the immediate and very harmful drying action of the sun, and especially of the wind, upon the fibrous roots of the plants. Hence the first rule for planting is to wait for dry soil and to select, if possible, a calm, cloudy day.

Too deep and too shallow planting are equally damaging; the first is certain to kill the plant by rotting the stem, and the second

leads to spindly, unsatisfactory growth, besides exposing the roots to serious strain in high winds, which dry out the soil to a remarkable degree. The success of Mr. Prince in England with shallow planting should not govern us in the climate of America, where the trials of the winter are more rigorous. Moreover, in the case of budded stock, deep planting has this added advantage, that the upper part will develop roots of its own and in time become independent of the stock which carried it.

The planting can be done by one person, but two working together will accomplish relatively much more and do better work; one holding the plant and the other filling in. In planting a long row, it will save time to trench out the site with a wheel hoe to a depth slightly greater than is required. Measure off and stake out the rose places, plant, and fill in.

BUDDED VS. OWN-ROOT PLANTS

Garden roses can be obtained from the dealers grown in two ways, either on their own roots or budded on the Manetti or brier stock.

There is some difference of opinion as to the relative values of "budded" and "own-root" roses. The advocates of the latter declare that the wild wood will sooner or later choke and kill the budded growth. This point is well taken if we admit the necessity of permitting the wild growth to develop, but if planting has been correctly done wild wood rarely breaks out. If it does, as it happens in exceptional cases, it can be easily distinguished and readily removed. The Manetti suckers nearly always push up outside of the plant and are covered with minute prickly spines. Suckers of the brier stock bear seven serrated leaves instead of the usual number of five, and so are easily identified. If a shoot is suspected of being wild, positive proof is easy to get. Remove the earth carefully, and follow the shoot down to the point of union with the rest of the plant; if this is *below* the bud, the shoot is a sucker and must be removed. Cut it off close and rub the wound with a little moist earth. Perhaps 1 per cent. of the roses in a well-cared-for garden will push out wild wood in a year, but in a badly tended garden a much greater proportion will appear—the result of too

shallow planting. This is probably the only valid objection that can be urged against budded roses.

The most experienced amateurs, as exemplified by Dr. Huey, put their faith in budded roses, in whose favour much can be said. They are much more vigorous, produce finer blooms, come into bearing sooner, and last just as long, if not longer. Budded roses give a fair amount of bloom the first season after planting, and each subsequent year adds to their vigour and beauty. Dr. Huey in 1887 made a bed of budded roses, and eighteen years after he reported in *Country Life in America* (March, 1905) that four had died, the others being still vigorous and healthy, although the soil had not been changed. Adjoining this bed, twenty-four strong own-root plants of Ulrich Brunner were planted ten years later, and at the time of the report, nine of them had died, while of the twelve budded Brunners immediately adjacent all were still flourishing. From this it is reasonable to infer that budded roses are at least as hardy as those grown on their own roots.

It must be admitted, however, that some

of the stronger-growing varieties do very well on their own roots, notably Ulrich Brunner, Magna Charta and Caroline Testout, but many fine varieties are utterly worthless unless budded, such as Viscountess Folkestone and Reine Marie Henriette.

There is a question as to which stock is most suited to our hot, dry climate. So far the Manetti has proven the best for most varieties, and the Messrs. Dickson bud most of their plants for export to America on this stock.

The English growers favour the brier, and the great majority of roses budded in England are grown on this stock. This is quite right and proper for the moist, temperate English climate, but not so suitable for ours. It is very probable that the best stock for our use has not yet been introduced, and equally probable that when found it will be a seedling of Crimson Rambler. The hardiness and great vigour of this variety, which does well almost everywhere, commend it highly.

The budded plants grown in Europe are taken up as soon as the wood is ripened in the autumn and shipped to us in the dormant state in time for planting before the ground

is frozen. They are usually received in such excellent condition that rarely one in a hundred of the hardy sorts fails to make good growth and a fair bloom in the following season.

PLANTING BUDDED ROSES

Before planting, each plant should be examined, all broken roots cut off cleanly with a sharp knife, and all eyes that can be detected on the stock—i. e., the portion below the bud—should be removed. If this is not done, the eyes will push out and suckers will develop from them. One difference in appearance between a sucker and a root is this: the sucker swells the farther it is from the stem, and the root tapers the farther it is from the stem.

A hole large enough to accommodate all its roots without crowding should be made for each plant. The collar or point where the bud was inserted and from which the new growth starts should be placed not less than two inches nor more than three inches below the surface of the soil, the roots spread out carefully, nearly horizontally, but inclining downward, taking care that no two roots

cross each other on the same level. If two have grown so that one must lie above the other, the earth must be carefully packed between; all the roots having been covered with fine soil free from fresh manure, the hole should be almost filled up and the soil *firmly* packed. This is very important, and the foot of a man of ordinary weight is not too heavy to accomplish the work well. Water the roots freely, and when the water is absorbed fill up to the bed level, and see that the union of the stock is where it belongs, two inches below the surface.

When all the plants have been placed, level the surface with a rake, cover with a top-dressing of about three inches of rough manure, and if planting is done in autumn, cut the long wood back to about one foot to prevent the plant being whipped and loosened by high winds. This extra wood is left to encourage root action, and should be cut back to two or three eyes as soon as the dormant eyes begin to show in the spring.

PLANTING ROSES FROM POTS

Several American dealers start a large number of imported budded plants in pots

for sale in the spring, thus obviating with the tender varieties the damage of winter killing.

An objection to this is the crowding of the large roots that cannot be spread out in planting without endangering the life of the plant, but good plants may be obtained in this way, although the bloom is not so fine nor the growth so strong during the first year. In setting out pot-grown plants, either budded or on their own roots, it is important to get them into the beds as soon as all danger of severe frost is over, in order that the plants may be firmly established before the heat of summer. Roses planted late in the season never do well, as they cannot attain sufficient vigour to withstand the burning heat of our summer sun.

The holes need only be made a little larger than the pot in which the plant is growing. Choose a cloudy day, in the afternoon, and after making the hole, knock the pot off by inverting the plant and striking the edge sharply on a firm substance. The handle of a spade, which has been fixed in the ground in an upright position, will answer the purpose. Fill the hole with water, press the ball of earth between the hands to loosen

the particles, and insert to the required depth, budded plants as previously directed, and own-root plants about half an inch deeper than when in the pot. Fill in with soil and pack the earth around firmly. Pot-grown plants will require staking if the varieties are of upright growth.

CHAPTER II

THE ROUTINE OF WORK

Cultivation in spring—Suckers and how to know them—Feeding—How to cut—Advantages of disbudding—The summer mulch—Making snug for winter—Fertilisers and manure—Propagation.

THE beds once properly made and planted, constant and regular cultivation is the secret of successful rose culture. Just before growth begins in the spring (about April 15th in New York), the surplus rough manure should be removed from the beds, and all the remaining fine particles forked in. Deep cultivation is not desirable, as the roots are likely to be injured or broken. Three inches in depth is quite sufficient to cultivate a bed that has not been trampled upon. Use a four-tine digging fork, as it is less apt to cause injury than a spade. The beds should then be edged and raked.

Throughout the entire season until the middle of July frequent stirring of the sur-

face with a hoe and a sharp steel rake is absolutely necessary for all the rose beds. The soil should never be permitted to become baked. After a hard rain, when the surface has been beaten down, it should be loosened as soon as it is dry enough to work, and should be kept loosened. This is one of the most important points in the cultivation of the rose.

SUCKERS

During this cultivation, and at all convenient times, keep a sharp lookout for suckers, which are growths shooting up from the roots from below the graft. Where the rose is budded on the brier, as is usually the case, the difference of foliage is so marked as to attract attention at once, the brier having very light green and small leaves as compared to the rose leaf, and also a gross reddish-white stem when young. The brier leaf has seven leaflets instead of only five as the garden roses have. The suckers should be carefully broken off at their point of junction with the root, if this can be done without disturbing the plant. Otherwise they should be cut off as low in the ground as the shears will reach. If this detail

is neglected, the result may be a choice crop of briars with corresponding shyness of rose bloom. Manetti stock is more difficult to detect, as it resembles the rose in leaf. It should not be used as a stock for out-of-door plants.

LIQUID MANURE

As soon as the flower buds begin to form, about half a gallon of weak liquid manure should be poured around each plant weekly as long as the plant continues to bloom. A good time to apply this is just before a rain, as it will thus be washed down to the tender, feeding roots and eagerly appropriated. The liquid manure should not be too strong. "Weak and often" is the gardener's motto. Half a bushel of cow manure to a barrel of water is about the proper strength. The liquids collected from the barn and stable, diluted to the colour of ale, may be used in the same quantities.

Frequent syringing with clean water, or spraying with a hose, when that is accessible, will do much to keep the leaves in a healthy condition. This is especially necessary near a large city, a factory, or a railway where soft

coal is burned. The floating particles lodging on the leaves fill up the pores, which are the lungs of the plant, and unless the foliage is kept clean the plant will speedily sicken and the leaves drop prematurely. In extreme cases in towns it is necessary to sponge the leaves in order to open the pores, but frequent syringing under ordinary circumstances will be sufficient. The frequent showering with water will also keep insect pests in check, especially aphis and red spider.

CUT THE FLOWERS FOR MORE BLOOM

When the roses are in bloom, be generous to your friends. Cut as many as possible each day. On the plant they soon attain their full development and fall away. They endure longer when cut and put into water indoors. Cut in the early morning before the flowers are fully open. It is better for the plant to have the flowers picked as freely as possible, and with as long stems as the growth will permit, merely observing the precaution of leaving an outward-growing eye, or perhaps two for safety, on the stem below the cut.

Where it has been found impossible to pick

all the roses for use, then the plants should be gone over daily and all faded flowers removed to a point at least two eyes below the flowers. A regular practice of this precaution is the only means of insuring some autumnal bloom from the Hybrid Perpetuals.

DISBUDDING

For large flowers disbud freely on all free bloomers and a very much finer effect will be obtained than in the effort to mature all that are formed.

Some varieties form large clusters of buds at the terminal point of the leading shoots, and if all these buds are allowed to remain the vigour of the plant is distributed among the group, so that the best results cannot be obtained unless one is striving for general effect. If fine single specimens are desired, the best bud only should be retained and all the others removed as soon as they can be pinched off. The centre bud is usually the strongest, but as it may possibly be malformed, the most promising bud should be selected. Rodocanachi, Prince Camille, La France, Magna Charta, Rosslyn, Clio, Jubilee,



KILLED BY A SUCKER

Beginners either do not know or neglect the fact that almost all their roses are budded. Their choice varieties are overgrown or killed like this

and Madame Isaac Pereire have this tendency markedly developed.

In the case of the multiflora and polyantha roses—all the cluster roses, indeed, including the Noisettes—the object to be attained is quantity of bloom rather than the large development of individuals, so disbudding is not advocated in those cases. Everything depends upon the desire of the gardener.

WHY AND HOW TO MULCH

When the great heats are on and after the last cultivation has been given, apply a liberal mulch of cow manure, or well-spent stable manure. The object is not to enrich the soil, but to retain the moisture. Generally this will suffice until autumn, but in some situations it may be necessary to water in spite of this assistance. Remove the surplus mulch in autumn before putting on the winter protection, so that the level of the beds may not be raised too high.

WINTER PROTECTION

With the exception of the Hybrid Perpetuals, Rugosas, Hybrid Polyanthas (Ram-

blers) and Wichuraianas, roses are benefited by protection in the East, and most of them require it.

The amount of protection being varied according to the severity of the climate. Dr. Huey, at Philadelphia, advocates a three-inch covering of rough manure over the entire bed as sufficient for all except the tender Teas, but farther west and north warmer bed-clothing must be provided. A neat and effective way for the latter is to surround the beds with a temporary fence of twelve-inch chicken wire filled with leaves. These are easily obtainable and are often troublesome to dispose of otherwise. Evergreen boughs make a fair covering, but they are difficult to obtain in quantity. Corn stalks are frequently used. Leaves, however, answer the purpose admirably, and a better or more natural covering it is difficult to get. They can go into the compost heap in the spring and become a valuable addition to any new beds later.

Commander Ward, on Long Island, prepares his roses for winter thus: By November 15th all roses, including the hardy ones, are to be given a liberal coating of well-rotted



BUDDED LOW

Naturally the strong-growing stock sends up many suckers which must be removed at once. Watch for this daily

manure around the base of the plant, forming a cone about ten inches high. All shoots of tender climbers relied upon for next year's bearing are carefully bent down and buried, with or without a salt-hay protection over the earth, according to the degree of hardiness. All beds except those of hardy roses are then covered after the first hard frost with a coating of dried leaves, at least twenty inches in thickness, held in place by wisps of salt hay or straw, the holding-down material not to be too heavy. The covering should be completed usually by Thanksgiving Day, but of course the final application of leaves will depend upon the actual date of the first good frost. Do not cover too soon, nor with leaves which are wet and soggy or half rotted. In the spring remove the covering gradually, none of it as a rule before April 1st, and some should remain until at least April 20th, to guard against late frosts. What remains of the manure may be forked in, being careful, however, not to get the rose stems buried beyond the proper depth.

In still colder regions it becomes necessary to protect even the Hybrid Perpetuals. When this is necessary there is no real pleasure to

be had from planting the Teas. One successful amateur in the southern part of Ontario adopts this method for the Hybrids:

Four or five layers of leaves are placed on the rose bed and close around the bushes after severe frost in the autumn, rather to prevent too rapid thawing in the spring than as protection against the winter's cold.

Standards, which are not often grown, need much more tender care than the ordinary low-budded plants of the same varieties. In Elizabeth Park, Hartford, Conn., where is the finest public rose garden of the East, they are dug up bodily each fall and buried in a straw- or hay-lined trench and covered with a foot or so of soil. In this way complete success has been achieved under very trying climatic conditions. Pillar roses can be wintered by being mulched and the whole top, support and all, wrapped in mats, hay, burlap or other convenient material.

FERTILISERS

The rose is a strong feeder and must not be neglected. Each year the beds should receive a dressing of manure. Indeed ani-

mal manure, from one to two years old, is, where it can be obtained, the most desirable of foods for the rose beds. Cow manure is generally preferred, as it can be used most liberally without any danger from burning. Horse manure, when new, is very heating and should not be used while in this condition except as a winter mulch. Hog, sheep and chicken manures are also very useful. The last two should, however, be used sparingly.

Of the commercial fertilisers, ground bone is the most useful. This may be obtained in several degrees of fineness and is often given in a mixture of grades—fine bone meal, medium ground bone and coarse crushed bone in equal parts. This may be used separately or to supplement animal manures. After the beds are well dug, scatter the bone on the surface until the ground is nearly covered; then, with the use of a fork, it can be quickly and thoroughly mixed into the already fined soil.

Nitrate of soda is one of the very best fertilising agents we can employ if it is given early in the season, and supplemented by bone later. It should be scattered thinly (say, about a tablespoonful to a plant) on the

surface of the beds about every five or six weeks during the growing season.

Dr. A. B. Griffiths recommended, in his "Special Manures for Garden Crops," a chemical manure composed of one-half ounce of superphosphate of lime, and one-quarter ounce each of iron sulphate and sulphate of ammonia. These quantities were to be put into two gallons of water, and the liquid applied to the roots without wetting the foliage. In "The Book of the Rose" (third edition), the Rev. A. Foster-Melliar states that sulphate of iron is said to give a better colour to the foliage, and in some sorts, such as Anna Olivier, to the blooms as well, but he does not place much reliance upon this. He recommends the following mixture, as prescribed by Mr. Tonks upon the result of analysis of the ash left from the burning of rose plants:

Superphosphate of lime.....	12 parts
Nitrate of potash.....	10 "
Sulphate of magnesia.....	2 "
Sulphate of iron.....	1 "
Sulphate of lime.....	8 "
	—
	33 "

This mixture should be applied in March and scattered over the previously hoed surface



BUDDED HIGH

Most desirable garden roses are weak growers, and are therefore usually budded on a strong-growing stock

of the bed at the rate of one-quarter pound to the square yard. A second and lighter dressing may be applied at the end of May if heavy rains have occurred.

PROPAGATION

Many methods are employed in propagating roses, but the practice here described commends itself to the amateur because it is simple and effective. Cuttings can be rooted in the garden or in the greenhouse. For out-of-door work they should be made in November, before severe frost, of wood of the current year's growth. They should be cut into lengths of six inches, tied into bundles with tarred rope and buried in sandy soil, eighteen inches deep, and furthermore protected from freezing by a covering of leaves. In spring, when the ground is thawed and settled, they should be planted in V-shaped trenches in well-prepared beds, using a little rotted barnyard manure. The cuttings should stand nearly erect and be so deeply planted that only one bud shows above the surface of the ground, two inches apart in the row, with the rows twelve inches apart. In this way many

desirable hardy roses can be multiplied, e. g., Crimson and Yellow Ramblers, the Dawson Rose, *Rosa multiflora*, *R. Wichuraiana* and all their other progeny, *R. setigera*, Prairie Queen and Baltimore Belle, etc., also the Manetti Rose for stocks upon which the Hybrid Perpetuals can be budded; but for the amateur it is best to buy the plants.

When they are grown under glass these same varieties will give a larger percentage of rooted plants, if the cuttings are made two or three inches long, planted in pure sand, in pots or boxes, and kept in a greenhouse, in a temperature of 45° F. These cuttings, also, should be made in autumn, before severe weather, of wood just completing its growth. They should be planted thickly, about one-half their length deep, and well shaded for three weeks. Keep the temperature so low that the buds will not start into growth before a callus is formed or the cutting is rooted. The young plants can be set out in May or early June, either directly from the cutting bed or after having been established in pots.



HOW TO PLANT AND PRUNE

A dormant budded Caroline Testout on Manetti stock. *A*—Point where bud was inserted. *B*—Surface of ground, showing how deep to plant. *C*—About where plant should be cut back in spring. Always cut above a bud pointing outwards

CHAPTER III

PRUNING

Treatment of newly planted stock—Spring the best time for the work—How to prune—The ideal in view—Quantity or quality—Where to cut—The winter as an ally—What not to prune—Autumn pruning—Pruning rules for all classes.

WHEN roses are planted in the autumn, prune them as little as possible. All pruning is best postponed until after February. Sometimes, however, non-climbing roses will shoot up at the end of the season in pithy, worthless stalks or weak streamers, whose swaying in the high winds is likely to be injurious to the plants by disturbing the roots. Such pithy shoots should be cut out altogether and the streamers topped off.

The pruning of the hardy roses, climbers and non-climbing, should be completed by the middle of March. Tender roses may be pruned in early April; the object is to keep the covering undisturbed as long as possible,

but to avoid waiting until the sap is running freely. A revision of the pruning will have to take place by May 1st anyhow, but it should be limited to what is indispensable.



A Crimson Rambler Rose is best pruned by removing the old canes entirely and shortening others if necessary.

Prune back recently planted roses rather vigorously. Protect all severe cuts with tree wax.

The degree of pruning each grower must decide for himself. If the largest individual

flowers are sought the pruning can hardly be too severe; but for ordinary garden purposes a moderate cutting will be better.

The stronger the growth of the rose, the less it should be pruned; many such roses, if too severely cut back, will run to wood (Margaret Dickson) or die out altogether (Gloire Lyonnaise).

In pruning, cut out all the dead wood and weakest shoots first. Where two limbs make a bad cross and are liable to chafe, remove one of them, remembering to keep the centre of the plant as clear as possible to admit the circulation of air. Now consider what you have left and what you want: if but few roses of surpassing size, then prune a vigorous plant to three or four eyes on the shoot; if you want quantity, leave six eyes, or even more. If the effect of large masses is wanted, four or five canes may be retained three feet in length, and all very old or weak



The same plant of Crimson Rambler, pruned, to be grown as a bush.

growth should be entirely removed. This will give a large number of flowers effective in the mass, but small, and with short, weak foot-stalks, scarcely able to support the weight of the blooms and not effective as cut flowers. This sort of pruning is entirely for outside show. After the bloom is over the canes should be shortened back at least one-half so that the plant may make strong wood for the next season of bloom. Plants pruned in this way require strong stakes.

If quality is desired, all weak growth should be removed and every healthy cane retained and cut back in proportion to the development of each plant. The weakest should not have more than four inches of wood left on the root, while the strongest may have eight or nine inches.

The canes should be cut off about a quarter of an inch *above* an outside bud, and care must be taken that the wood is not torn nor the bud bruised. The shoot growing from the uppermost bud will usually be strong, and will grow in whatever direction the bud points. Therefore the highest bud left should point toward the outside of the plant, that the head may be open and light and air admitted.

Roses pruned in this way do not need stakes. They are sufficiently strong and stocky to hold erect any weight they may be called upon to bear. They will require very little summer pruning if the blooms have been cut, as eight to twelve inches of wood are removed with each flower. Of course, the number of blooms will be much reduced, but the quality of the fine specimens obtained will amply repay the lack of abundance.

Pruning of Hybrid Teas and Teas may be profitably left until the first signs of life are discoverable, as evidenced by the bark becoming greener and the dormant buds beginning to swell. By that time any dead or dying wood can readily be detected, thus making it easier to select what should be removed and what retained. They do not need such severe pruning as that prescribed for the Hybrid Perpetuals; twice the amount of wood may safely be left if it is promising.

Bourbon Roses, as Malmaison and Mrs. Paul, require very little pruning. If the weak wood is removed and the strong shoots shortened a few inches the best results will be obtained. This class will not bloom on the new wood.

In pruning the weak-growing varieties, it will generally be found that the winter has done most of the work already, leaving but little to choose from. In this case prune to

the very soil, if necessary, to get to sound wood. If anything remains at all after this apparent destruction, these same plants will be found to bear profusely before the season is over.



Hybrid Perpetual Rose before pruning. (General Jacqueminot)

Rugosas, climbers and pillar roses should be pruned as little as possible, merely removing the old wood past bearing, cutting out dead wood and trimming back the ends of the

remaining shoots slightly, after training them. It may be stated here that in training all climbers, you must avoid straight-up training, or the sap will all tend to the top, denuding

the lower part of the plant. First bend the shoot in one direction or another, then let it tend upward if necessary. If a climber has developed more shoots than it appears able to support, the weakest may be removed, remembering that in most cases the bloom of any one year is best on the last year's shoots.

AUTUMN PRUNING

Before the high winds of November begin, the bushy tops of all canes in the dwarf-growing varieties should be removed unless they are securely tied to stakes. This is to prevent the plants from being whipped by the wind and the tender feeding roots from being broken. It is better to leave the canes about two feet in length. The plant should not be cut back to the point suggested for spring pruning, for a few hot days will force out the uppermost eyes, which later will be destroyed in the winter. Enough wood should



The same bush after pruning.

be left to insure the safety of the eyes that are retained for next season's flowers.

RULES FOR PRUNING

I. *Hybrid Perpetuals, Hybrid Teas, Provence and Moss Roses* are best grown as bushy plants. They should be severely cut back while dormant in spring, but never in summer or early autumn, as is sometimes done because they are straggling and look unkempt in an otherwise neat garden. From two-thirds to four-fifths of last year's wood, and all weak shoots, are removed. This results in strong growths, producing large flowers, the size of which can be increased by disbudding. If numerous smaller flowers are desired—i. e., quantity at the expense of quality—the shortening-in need not be carried so far. It is permissible to cut back only one-half, but this treatment is objectionable, and does not tend to keep the plants in good condition. This winter pruning should be supplemented by a summer pruning, which consists of simply cutting out the flowering shoots after the flowers fade. It is already done if all the blooms have been gathered. Remove weak



Pruned in spring for quality of bloom. A Hybrid Perpetual rose. Twelve canes from six to eight inches long, each cut above an outside bud, giving an open centre to the bush



The same bush eight months later. Showing that severe pruning does not check growth. Also how bushy tops should be cut back in autumn to prevent injury by the wind

growths and all sprouts from the stock as they appear. As the plants age, worn-out stems must be taken out and the centre left open to encourage new shoots. Some of these roses are short-lived and must eventually be replaced. Hybrid Perpetual Roses of weak habit—e. g., Prince Camille de Rohan—should be cut back harder than vigorous growers like General Jacqueminot, but only when in good health. Hybrid Perpetuals, as a rule, require the most severe pruning; Moss and Provence Roses the least.

2. *Climbing Roses*—the Dawson, Baltimore Belle, Prairie Queen, Crimson Rambler and others—need not be pruned so hard as those above described. Cut off in spring, before the buds open, from one-fifth to one-third of the previous year's growth; also, in established plants, any of the old, flowering wood which is enfeebled. Do not hesitate, even if a part of the trellis is laid bare. It is by this means only that these plants can be kept vigorous. In summer take out most of the old wood after it has finished flowering and train new growths as desired, pinching out weak and objectionable shoots.

Half-Climbing Roses, like the Japanese Rosa

multiflora (*R. polyantha*) and its varieties, the Sweetbriers, *R. setigera*, the type, and the Dog Rose, are commonly grown as bushes and pruned as above described, more attention being paid to cutting out worn-out stems and keeping the centres open; but the flowering wood must not be removed after blooming where fruit is desired in winter.

Trailing Roses (*R. Wichuraiana* and its varieties) require comparatively little pruning, particularly in the North, where unfavourable seasons are apt to kill some of the wood. By taking out dead branches and cutting back enough to restore the balance, opportunity is given for new growths which are essential to keep them in good condition.

Half-climbing hybrids of this rose—e. g., Sweetheart, Debutante, etc., and the old Ayrshire Roses—*R. arvensis* (*R. repens*) and their varieties—are pruned in much the same way.

The Briers—the Persian Yellow Rose, Harrison's Yellow, and Austrian Brier are not strong growers. One must be cautious with the knife, cutting out the flowering wood after the blooms fade. In established plants the worn-out stems can be removed at any



Rosa rugosa is pruned by thinning out crowded shoots and shortening the rest a few inches at the top. Only the strongest growths are retained



The finished rugosa rose bed; plenty of room for next season's growth. Only strong wood is left. This will make a shapely bush

time. Scotch Roses can be treated in the same way, and are much benefited by being cut clean to the ground once in about seven years. Their habit of spreading by underground stems helps the recovery.

3. *Wild Roses*, *R. blanda*, *Carolina*, *lucida*, *nitida*, etc., are grown not only for the flowers, but for the bright twigs and hips, in winter. Consequently much depends upon sturdy growth. They are frequently planted in such quantity that careful pruning is impossible. Take out the older wood from time to time, and at intervals of several years, determined by their condition, cut clean to the ground, at the same time give manure, and reset the plants, discarding the old and feeble. *Rosa rugosa* and its variety *alba* do not require annual pruning, unless it be a little shortening-in of the tips—an interminable operation. After these plants are well established, however, the older canes should be cut out occasionally, thus keeping the centre free and encouraging new growths. If at any time they are in bad shape from winter killing or disease, they can be cut to the ground. Hybrids of *Rosa rugosa*, like *Madame Bruant*, are helped by spring pruning,

cutting back the annual growths, and thinning out old wood.

4. *Tender Roses*, like the Teas, Chinas, Bengals, and Bourbons, should be cut in at the beginning of the flowering season, and, since they are really perpetual bloomers, this process must be continued as long as the season lasts. Weak and unproductive shoots must be removed. Cloth of Gold, Lamarque, Maréchal Niel, and other roses of like habit are closely pruned after their wood is well ripened, when they are most at rest. Under glass, this is usually done just before starting them into growth. To bloom the Cherokee Rose in a cool greenhouse in January and February, four-fifths of the summer's growth must be cut away in October. Worn-out canes can be removed at any time. The double-flowered varieties of *R. Banksia* are severely cut back after the blooms have faded, in May or June in a cool house.

CHAPTER IV

INSECTS, DISEASES AND SPRAYING

Only one really serious pest—Importance of general good health—Every-day remedies—Water and poisons—The scales—Fungus diseases worse under glass—No need for despair—When to spray.

INSECTS

OF all the ornamental garden plants, the rose bush usually suffers the most from insect pests, although well-grown, healthy roses in the open air suffer little, except from the rose bug or beetle, the most formidable enemy of all.

Rose beetle. This is very destructive if allowed to increase. Daily inspection is necessary whenever it appears. The beetles are oftenest found buried in the heart of the choicest light-coloured flowers, and are most numerous on sandy soils. Hand picking in the early morning is the only remedy, and a small vessel half filled with kerosene is a safe and convenient receptacle. Paris green at

the rate of one pound to two hundred gallons will kill the beetle, but it also injures the foliage. The application of arsenate of lead, five pounds to fifty gallons of water, is recommended.

Rose slugs are usually found on the under side of the leaves and may be detected by the skeletonised appearance of the leaf. These small, green, slug-like worms are the larvæ of a small black saw-fly, which may be seen busily at work in early June thrusting its egg into the leaves. A second brood of the slugs works in August. They are oftenest found on plants grown in frequented places, such as a porch, where the birds will not remove them. A decoction made of two tablespoonsful of powdered white hellebore to four gallons of boiling water, applied when cool with a whisk-broom, so that the under surface is thoroughly wetted, proves most effective. One thorough application will usually suffice, but if the slug has appeared in given places during previous years, anticipate his coming and apply the hellebore solution before the expected arrival, or, since it is a chewing insect, a Paris green spray can be used.



Syringing the under sides of the leaves. The rose slug is found on the under side of the leaf, which it skeletonises



Scattering hellebore from an old powder can. Also a decoction can be applied from below



The only effective way against the beetle, the worst enemy of roses. Pick by hand and throw into a pail of kerosene

Aphis, or green fly, is the most common pest that the the rose grower has to contend with. Vigilance is the best remedy. The fly should be attacked just as soon as it appears, as the increase is on a scale of marvellous rapidity. The finger and thumb are excellent for the early attack. At that time a plant may be cleansed in a few minutes, but it should be at once sprinkled with tobacco water in which a small portion of whale-oil soap has been dissolved.

Leaf hopper. Beginning early in June and continuing throughout the season, the leaf hoppers appear. These pests are a constant menace. When the upper surfaces of the green leaves show minute yellow blotches, a glance on the under sides will reveal the culprits, and when the bush is jarred, they jump or fly off in large numbers. They are minute, active, light-yellow leaf hoppers, or the misnamed "thrips" of the rose grower. Most of their life is spent on the under sides of the rose leaves. They suck their food from the inside of the leaves, often seriously weakening the plant.

The plant lice and leaf hoppers are sucking insects and must be suffocated with insect

powder or tobacco dust, or they must be hit with an oil, a soap, or a tobacco spray. Kerosene emulsion, a strong tobacco decoction, or whale-oil soap (one pound in six to eight gallons of water), will kill all that are wet with the spray, but it is practically impossible to hit them all with one application, and they develop so rapidly that usually it is necessary to repeat the dose several times during the season. Either of these sprays will doubtless kill any slugs that may be at work at the same time.

WATER AND POISONS AS REMEDIES

If a strong water pressure is available, one can often master all of these serious enemies of the garden rose bush with the hose and a coarse spray nozzle, by simply knocking off the insects with a spray every few days.

In trying poisons, remember that rose foliage is tender and may be injured by strong mixtures.

Very common is the bark louse, which survives the winter and is usually found on old wood. It can best be treated before growth begins in the spring and can be removed by scrubbing with a tooth-brush and a plentiful



MAMAN COCHET

Hardest of Teas. Flowers all season. Good for bedding.
White or pink



CAROLINE TESTOUT

One of the very best Hybrid Teas. Bright satin rose with
brighter centre

supply of soap and water. Kerosene emulsion is of course a proper remedy for this, too.

The rose is just as likely as any other plant in the garden to be attacked by the San José scale, and must be treated similarly to other infected plants. The lime-sulphur-salt wash is found to be superior to all other remedies yet tried. An objection to this lies in the whitewashed effect given to the plants, but the addition of lamp black to the mixture tones down the colour to a dark greenish grey, which in the garden is worth the little extra trouble involved.

Sometimes curious half-circular pieces are cut out of rose leaves by the leaf-cutter bee, which deftly makes them into long tubes containing several cells in which its young are developed.

DISEASES

The rose is subject to a hundred or more fungous diseases, the majority of which, happily, are not serious obstacles to the gardener. There are a few, however, among the host which add to the troubles of the grower.

The Black Spot is the most wide-spread and conspicuous of all the diseases. It was first

described in 1826. This is an old enemy, and has long been known to the rose growers in Europe. The foliage, when attacked, soon develops the characteristic black spots, and the leaves become elsewhere pale, and shortly fall to the ground. As a result, rose houses badly infested with the black spot show but few leaves and fewer blooms. The microscopic structure of this fungus has been fully considered, with plates, in the first annual report made by Professor Scribner as Chief of the Section of Vegetable Pathology of the United States Department of Agriculture, for the year 1887. This trouble may be held in check by the carbonate of copper compound, using five ounces of the carbonate of copper to three quarts of ammonia and sixty gallons of water. The spraying should be done once a week, using a hose with a nozzle that gives a fine spray. The point should be to wet every part of the plant, and yet not drench it. If many leaves have fallen from the plant they should be gathered up and burned.

Some varieties are more liable to the black spot than others. When possible—that is, when all other things remain the same—it is, of course, wise to grow those least susceptible

to the disease. Dr. B. D. Halsted has seen the black spot upon a species of wild rose (*Rosa humilis*), where it was causing the leaves to become spotted and yellow. The wild plant was growing but a short distance from a neglected estate where garden roses were badly spotted.

The *Actinonema*, the fungus causing the disease, belongs to a small genus, and some of the species are parasites upon the bass-wood, beech, ash, viburnum. The one upon the rose is not found upon plants outside of the genus *Rosa*, and there has its favourite species and varieties. This is shown in a remarkable manner with some of the cultivated sorts grown side by side in the same house. It is often very bad upon the American Beauty.

The Rose Leaf Blight disfigures and injures the rose leaves almost as badly as the black spot. A thoroughly diseased leaflet has large irregular blotches of grey colour surrounded by a margin of dark purple. The grey dead centre of the spot bears a number of pimples or specks—more numerous and conspicuous near the centre—and in these the spores are produced. It is closely related to

the leaf blight of the strawberry. It is important to know these relationships between the various plant diseases, for it is helpful in the struggle in overcoming them. The leaf blight of the strawberry is very much more common than that of the rose, and any effective remedy found for the former may be of value in checking the ravages of the latter. Fruit growers have found this strawberry leaf blight a hard one to check, perhaps because of its many forms of spores and the low habit of the plant and the consequent difficulty of readily spraying the foliage upon the under side. This difficulty does not obtain with the rose, and it may be controlled more easily. There is no question but that the standard fungicides should be used when this fungus is at work.

The Rose Mildew.—The most familiar fungous enemy of the rose is the mildew (*Sphærotheca pannosa*, Wallr.). This disease has been known for a long time and is quickly recognised by the powdery coat it develops upon the affected parts. It is so rapid in its development that rose growers are sometimes inclined to assign the cause of the growth to that which is in reality only the

condition or conditions favouring the appearance of the mildew. It comes from spores, which falling upon the surface of the plant will quickly germinate and produce a cobwebby coating to the foliage. This fungus is so different from the others that have been mentioned, that a word is needed in way of explaining the habit of the parasite, as this lies at the foundation of the rational treatment of the pest. In the first place the rose mildew is a surface feeder and only attaches itself to the epidermis of the host, through which by means of small suckers it derives its nourishment from the deeper-seated substance. Being, therefore, entirely upon the surface, the fine threads of the fungus may grow rapidly and make a mildew patch in a very short time that is easily seen. The exact conditions that favour this development of the spores are pretty well known to rose growers. Some of them claim that they can develop the fungus at will, on plants under glass, by omitting some essential point in heating, watering or ventilation, particularly the last. If a certain current of air is sure to produce the mildew, it follows that the spores of the mildew were widely scattered through the house, and that

they started into vigorous growth at those places where the proper conditions were supplied.

The superficial nature of the mildew is of great importance when the matter of remedies is considered. It is a fungus that is in the air, as it may be termed, in contrast with most of the rose diseases that when active are deeply seated in the plant. The spores are produced as minute delicate cells upon upright filaments that arise from the web of horizontal vegetative hyphæ. They are easily reached by fungicides and apparently destroyed without difficulty. Any of the ordinary sprays will answer for the mildew, but even these need not be resorted to, provided spraying is uncalled for by the presence of other rose fungi. In short, if the mildew is the only enemy at hand, it may be kept in check by the use of flowers of sulphur, either dusted upon the plants or even the pipes of the greenhouse, the point being to produce a gentle fumigation of the plants and the whole house with the fumes of the sulphur. Professor Maynard, of the Massachusetts Experiment Station, finds that a small kerosene stove is most convenient for this purpose, and the

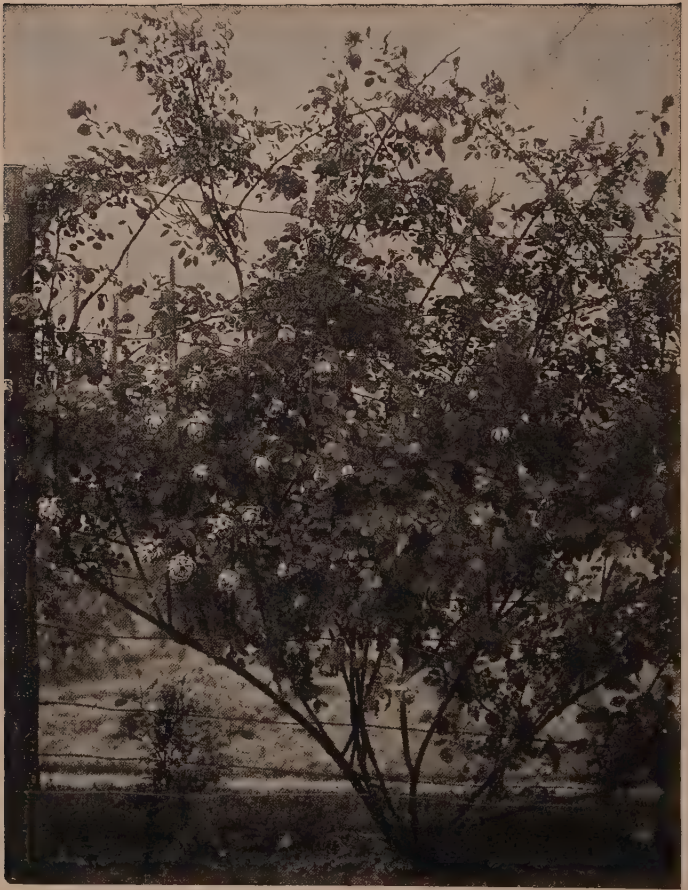
sulphur, by means of it, is boiled in a kettle for two or three hours twice a week, the house being closed during the operation. The only precaution is to use no more heat than is sufficient to boil the sulphur, for should it catch fire it might damage the plants. Mr. John N. May writes that the best way to get rid of the mildew on roses under glass is to close the house about eight o'clock in the morning, run the temperature up to 75° , then, with a bellows, fill the house full of sulphur. Let the house remain closed till it reaches 85° or 90° , and afterward let air in gradually. A constant circulation of air is likewise recommended for roses at all times. Potassium sulphide, one ounce to two gallons of water, sprayed upon the plants has proved an effective remedy. Dr. Massee states that "flowers of sulphur mixed with about one-third of its volume of slaked lime dusted on the foliage prevents the spread of the disease." Gardeners, from long experience, have come to the belief that rose mildew is induced by a weak condition of the plant, resulting from partial starvation, irregular or excessive watering, and undue exposure to drafts of cold air. The best success in rose growing, as in all

other things, attends those who give constant, intelligent care to the many details.

The mildews of the phlox and verbena have been effectually controlled by spraying with kerosene emulsion of the standard strength for insects. This mildew is so closely related to the one of the rose that similar results may be expected with the rose mildew.

The Downy Mildew of the Rose.—A second form of mildew (*Peronospora sparsa*, Berk.) is sometimes troublesome to rose growers. This is a close relative of a similar one upon the greenhouse lettuce, and another is often destructive to spinach, while a third is the cause of a soft rot of potatoes. It produces downy or velvety patches upon the leaf, quite unlike the form above described, and the threads run through the substance of the leaf. In this case the fungus will have vegetated for a considerable time before it appears upon the surface, which is entirely for the purpose of producing its multitude of spores borne upon the tips of the many aerial branches.

It is evident that the sulphur fumes may cause the destruction of the spores, but may



REINE MARIE HENRIETTE AS A TRELLIS ROSE

Three hundred blooms three years from planting. An excellent way of using climbing roses. A climbing hybrid tea

not reach the parts that are within the substance of the host. Such treatment, while tending to check the spread by means of the spores, will not be sufficient to arrest the growth of the fungus that is already in the tissue of the host.

There is also a second form of spore that is produced beneath the skin of the leaf and out of reach of fungicides. As a precaution it is therefore well to destroy any mildewed leaves, or else when they fall the spores may be set free.

The Rose Rust (*Phragmidium subcorticum*, Schr.) is a genuine rust similar to that of the wheat, oats and other grains. It is not common upon indoor roses, but is sometimes and in some places a troublesome pest upon roses grown for ornament in the flower garden and lawn. It attacks more especially hardy hybrid varieties. All three forms of the fungus are produced on the same host. The æcidia appear in late spring on the leaves and young shoots, forming powdery orange patches, and often cause distortion of the shoots. About midsummer the patches become deeper in colour, owing to the formation of uredospores. Finally the resting spores

are produced as minute black dots on the under surface of the leaves.

The appearance of the disease in spring depends entirely on the presence of winter spores in the neighbourhood. It is therefore necessary to collect and burn all fallen leaves in the autumn. Plants that have been attacked the previous season should be thoroughly drenched with a solution of sulphate of copper in water—two ounces in three gallons—in early spring before the buds expand. The soil around the plants may also be sprayed with the same solution. Diluted Bordeaux mixture, or ammoniated carbonate of copper solution, checks the *æcidium* and *uredo* stages.

The fungus also grows on wild roses, and these may become a source of infection unless precautions are taken.

When a shrub is badly infested there is little better to do than cut the whole plant away close to the ground. This fungus is closely related to the one upon the blackberry and raspberry, causing the destructive rust of those plants. It has been shown that the fungous hyphæ penetrate all parts of the blackberry plant, even the roots, and the rose



STANDARD ROSES IN A FAMOUS GARDEN AT SARATOGA, N. Y.

Standard roses are popular in England, but they do poorly in America, needing to be buried in a trench for winter protection. They are effective in the formal rose garden because they break the monotony of a uniformly low level

grower may not find that severe pruning will rid a plant of the pest when it is thoroughly infested. Therefore, as with the raspberry rust, it may be necessary to root out and destroy the rose bush and start again with a healthy plant. This rose rust is a good illustration of the great depth to which a fungus will penetrate in the host and the difficulty of eradicating the same. It goes without saying that ordinary sprays will be of little curative effect upon a plant when the living vegetative threads of its fungous parasite penetrate to all parts.

In California the rust upon roses is very much worse than it is in the East—sometimes every leaf upon a shrub is badly affected. In such a warm climate, when the plants retain their foliage throughout the year, the dark winter spores not being needed, are omitted in the life cycle of the fungus and the orange-coloured form of summer is perennial.

The Rose Anthracnose is chiefly characterised by the scarcity of leaves. Instead of a plant with foliage upon all the canes there are but few leaves upon some stems, while others are entirely defoliated. The whole plant is infested with the fungus, and this

parasite so saps the vitality and interferes with the processes of growth that the leaves, even if they were healthy in themselves, are unable to perform their work. The fact is, that the leaves are infested with the anthracnose filaments, and soon after falling, if not before, they will show the spore formation of the anthracnose fungus, *Glœosporium rosæ*. In general appearance and habits of growth, this fungus is quite similar to the one causing the anthracnose of the raspberry; possibly it is identical, and if so the presence of the one is a menace to the host of the other.

The rose plant is most likely to be attacked while young, or at least it is to be presumed that the young portions of a plant are most susceptible. The attack is from without, and the spores falling upon the surface of the young, tender canes and leaves as well, there germinate and produce, in a short time, an affected spot. If this takes place in a cane, it is natural to suppose that the portion above the infested part will be girdled, in so far as the attack is great, and this will interfere with the direct support by the whole plant of the part beyond the diseased place. Besides this, the fungus spreads, and more rapidly, in

the direction toward the tip of the cane. It is not unusual for a diseased plant to send up apparently healthy shoots from near the base of the stem, but these become infested in turn.

Roses whose foliage has a sickly colour, and whose leaves fall, especially from the tips of the canes, prematurely, may be suspected of being victims of the anthracnose. A hand lens should be sufficient to assist in finding pinkish blotches upon the leaves, particularly those that lie upon the moist earth beneath the half-defoliated plant. Similar, but better defined pimples usually occur upon some portion of the cane.

The multitude of spores produced in pimples upon canes and fallen leaves, the ease with which they are transported by water, the rapidity of germination—all these factors combine to render this fungous enemy of the rose highly contagious.

A coating of the Bordeaux mixture upon the leaves and stems prevents in large degree the entrance of the germs. All plants that are nearly leafless from this cause should be either cut down close to the soil or thrown bodily into the burn-heap.

The Rose-Leaf Spot.—Somewhat similar

to the leaf blight previously mentioned but rarely met with is the leaf spot, due to the fungus *Cercospora rosæcola*. This produces spots that are of a grey colour with a dark purple border, and the spores are long and borne in little tufts upon the surface of the central portion of the dead areas.

As yet this leaf spot is not common, but when found at all is often quite destructive. As the spot fungus produces its spores on the outside of the plant, it is easily controlled by fungicides.

Black Speck on Roses.—Closely associated with fungous diseases of the rose, and generally regarded as such is the black speck. Little round, black dots about the size of a pin's head are seen scattered irregularly on the (generally lower) surface of the leaves or on the stem, label or stake near the plant.

This trouble is due to the indirect, and not the intentional action of a fungus, and in this respect is quite unusual and merits a word of consideration. The fungus that is the source of trouble is one of the moulds and grows upon organic substances and not upon the rose.

It forms in large numbers upon the manure



LORD PENZANCE HYBRID SWEETBRIERS

Brenda on right, taken two years after planting. Two seasons later the plants are four times as large. Very desirable where there is plenty of space.

used to cover the bed where roses are growing. As it matures a dark oval ball or sac is produced filled with spores. This black sac is supported upon a swollen stalk rising from the surface of the manure, and when mature the enlarged portion, filled with liquid, suddenly forces off the spore sac and collapses, throwing the ball of spores into the air. These dark spore sacs are covered with moisture as they are discharged and will adhere to any object which they may strike in their flight.

The height to which the dark sacs are thrown is fully ten feet; but there is a rapid falling off in the number upon any given area when the height of two or three feet is reached.

These specks, of course, may be upon any plant that is within range; but they do no further harm than the disfigurement thereby produced. They are more often met with in rose houses, because there the manure is more frequently left upon the surface than with other kinds of plants.

This extensive list of things which are possible sources of trouble to the rose grower, should not be regarded entirely as a barri-

cade to frighten the prospective beginner. The diseases and the insects exist, and they may at one time or another make an assault on the rose garden or rose house. They are not among the essentials of rose culture, but a reasonable knowledge of how to identify the one or the other and how to advance against it is a great aid to success. As a rule, these pests thrive best when the cultural conditions under which the plants are growing are of the worst. It is not true that they are the creatures of neglect, but they are certainly the fruits of neglect.

WHEN TO SPRAY THE GARDEN ROSES AND HOW

Dates based on an average season in New York [Allow four days' difference for every hundred miles of latitude].

Use the insecticides and fungicides at the following strengths:

Sulphide of potassium in a solution of one-half ounce to one gallon of water.

Arsenate of lead, five pounds to fifty gallons of water.

Whale-oil soap, one pound to eight gallons of water.



A CLOSE VIEW OF THE ALTAI ROSE

This excellent shrubbery rose has larger flowers and seems better adapted to our climate than the Scotch rose, of which it is a botanical variety. Flowers white, about two and a half inches across

Do not use any poisons unless they are really necessary.

Mid-April.—Spray roses and neighbouring trees with Bordeaux mixture.

Late April.—Just before leaves open. Whale-oil soap.

May 10th.—Leaves open. Potassium sulphide.

May 17th.—Potassium sulphide.

May 21st.—Buds set. Whale-oil soap.

May 24th.—Potassium sulphide.

June 1st.—H.P.'s begin to bloom. Potassium sulphide.

June 7th.—H.P.'s bloom in quantity. Arsenate of lead.

June 14th.—H.P.'s bloom in quantity. Arsenate of lead.

June 21st.—H.P.'s bloom in quantity. Whale-oil soap (last application).

June 28th.—H.T. and T. in quantity. Arsenate of lead.

July 4th.—H.T. and T.; H.P.'s bloom ends. Arsenate of lead.

July 11th.—H.T. and T. in quantity. Whale-oil soap.

July 18th.—H.T. and T. in quantity. Potassium sulphide.

July 25th.—H.T. and T.'s bloom ends.

Potassium sulphide solution.

August 1st.—Potassium sulphide solution.

August 8th.—Potassium sulphide solution.

August 15th.—Potassium sulphide solution.

CHAPTER V

THE ROSARIAN'S CALENDAR

The following calendar of work in the rose garden is based upon experience in the neighbourhood of New York City, and of course is subject to the usual variation of dates according to the distance north or south of New York. The vagaries of the season must also be taken into consideration. The dates given are relative, not absolute.

March 15th.—Finish the pruning of hardy varieties already planted.

March 25th.—Plant new hardy roses, pruning new plants rather more severely than those of the same varieties already established.

April 15th.—Finish the pruning of tender varieties, as far as possible, without uncovering completely. Give to all the beds and to any neighbouring pear trees, grape vines, or other plants subject to fungoid troubles, a good spraying of Bordeaux mixture as a preventive.

April 20th-25th.—Uncover tender varieties.

Plant any new ones received, giving these slight protection of loose hay for a short time over the tops, and a rather severe pruning.

End of April.—Roses generally in leaf. Give a preventive spraying of whale-oil soap. Final touches to pruning.

May 20th.—Buds forming. Second spraying of whale-oil soap.

May 25th.—Earliest roses bloom (Scotch followed by the Luteas). Apply liquid manure to H.P.'s.

June 5th.—Hybrid Perpetual Roses in quantity. Watch for rose bug.

June 10th.—Third spraying with whale-oil soap. Rose bug. Treatment as necessary. Apply liquid manure to H.T.'s and T.'s.

June 20th.—Hybrid Teas and Teas in quantity. Watch for rose bug and for mildew; treat the latter with sulphide of potassium.

July 1st.—Last spraying with whale-oil soap; Hybrid Perpetuals decreasing.

July 10th.—Rose bugs disappear. Commence regular applications for black spot, if a wet season; sulphide of potassium



Banksias have flowers only a quarter of an inch across, but are unrivalled South for fragrance and glossy foliage



A rose tree in California. Noisettes are unrivalled for this purpose in warm climates

THE TENDER ROSES FLOURISH IN WARMER STATES

every week, or dilute Bordeaux mixture every twenty-four days, this treatment depending wholly on weather and appearance of foliage, and lasting, if necessary, to August 20th.

July 20th.—Hybrid Teas and Teas decreasing. Mulch beds by this date at the latest.

August 30th.—Hybrid Teas and Teas, second bloom begins, lasting until frost.

September 15th.—Second bloom of Hybrid Perpetuals begins, but usually it is not very plentiful.

October 15th.—Prepare new beds for the next spring planting. Remove from old beds any of the mulch that cannot be forked in.

November 15th.—Commence placing manure protection around roots, tenderest roses first.

November 30th, or after a nip or two of decided frost, cover up tender roses for the winter.

CHAPTER VI

ROSES FOR CUT FLOWERS UNDER GLASS

Its importance—The style of house—Even span and three-quarter span—Iron and wood frame—The cost—Benches or solid beds—The benches—Soil and manures—How to compost—Soil preferences—Filling the benches—Cleaning the benches—Lime and sulphur wash—Planting—Watering—Cultivation—Importance of ventilation—Avoid changes of temperature—To prevent mildew—How to use sulphur—The cutical autumn period—The early firing—Temperature—A combination of factors—Time from planting to flowers—Prune when cutting—Blind wood not of importance—Kinds that will grow together—Roses with carnations—Manuring and mulching—Management in spring—Professor Stuart's formula—Quantities of fertilisers to use—Carrying over—Treatment of new plants—Why buy from a dealer—Propagation—Select flowering wood—How to make a cutting—The sand for propagating—Soil for young plants—After the cuttings strike—Shifting into larger pots—Summer plunging—Spring care—Flowering Tea Roses in pots—Hybrid Perpetuals in pots—All about growing American Beauty.

THE art of growing roses under glass has been brought to its highest perfection in

America. The commercial importance of this one branch of the florist's trade is already enormous and the tendency is for its continued increase. About 2,000,000 square feet of glass are used in the greenhouses devoted exclusively to the production of roses for the cut-flower market in one large "rose factory" area within twenty-three miles of New York City. Under this cover an army of 450 men is continuously at work, and fully \$20,000 a year are paid for the carriage of the floral burden from the growing districts to the city market. These figures represent but one district—the most important one, it is true—but they should be doubled to be fairly representative of the united sources of supply for that one city. This will suffice to show the immensity of the demand for good roses. In these establishments the operations are carried out upon a gigantic scale, but in their details do not differ from what is necessary for the private grower who desires to raise roses under glass for home use. If it is intended to grow roses at all, it will be worth while to make one's plans to do the work thoroughly. A "cheap" greenhouse may be a continual source of worry and expense.

THE HOUSE

A good house is essential. Without an adequate structure full success cannot be expected. But that statement need not deter anyone from making the attempt in a reasonably well built and sufficiently lighted house where the heat can be had. The type of house most favoured for forcing roses was formerly what is known as the three-quarter span, in which one side of the roof was much wider than the other. Nowadays opinion is equally favourable to the even span. On a hillside the former style of house is to be preferred, as it possesses some structural advantages. The long slope of such a house is to be open to the south, so as to receive the greatest amount of sunlight. All houses of whatever pattern will, of course, be run east and west. On a hillside such a house does not have an excessively high wall on the north side which it has, of course, when built on the level. The three-quarter-span roof makes the house very high in the centre, as a regular pitch of seven and one-half inches to the foot is maintained. The even-span house, in which both sides of the roof are of the same

size and the ridge is in the centre, is perhaps to be preferred, as it is cheaper to build and costs less for repairs. On a private place the advantages of the even span are still greater, because of the better adaptation of such a house to a variety of uses. Thus, if the owner is tired of growing roses, or has had no success, the house is well adapted for some other plant.

Houses may be either of wood, or of wood and iron combined (which is to be preferred). This is sometimes referred to as iron or steel frame, with a wood veneer to act as a cushion for the glass. The iron house costs more, naturally, but it lasts longer. It costs less for repairs and admits more light, because its framework is more slender and casts smaller shadows. A house suitable for roses, even span, 25 x 50 feet, six-foot sides, iron frame, can be erected for about \$2,200 without masonry work, but covering cost of erection, cement walks, iron frame benches with tile bottom and glazed with 16 x 24-inch double thick glass; also boiler and an adequate system of four-inch cast iron pipes to maintain a temperature of 55° to 60° in zero weather and a cellar about ten feet wide

across one end of the house. Such a house should have two lines of ventilators, at the ridge. If the house is to be built with a possibility of growing other plants at any time, side ventilators may be provided also, to be used when necessary. Certain fluctuating charges on account of freight, cartage, expenses of workmen, excavating and grading would have to be added to the figure quoted. The cost of these would vary according to local conditions and might reach a total of \$700 more, and masonry work would consume perhaps \$1,000. Thus a sum of about \$4,000 should be figured upon as necessary to build a really first-class house of the most approved modern type for roses, including American Beauty, which requires more head-room and more heat than the other varieties commonly grown under glass. A house of the same size built of sash bar, all cypress wood, and without cement walks would cost about one-third less. An iron frame house 20 x 50 feet would cost about \$1,900 for the superstructure and \$900 for masonry, including the cellar. The height of the sides modifies the cost of the house very materially, but necessitates a greater expenditure to maintain the required

degree of heat. In fact the problem of what house to use is to be looked at in the light of adjustment to circumstances. The greater the first cost, the less the after expense, and as in all other things, the best, in the long run, proves to be the cheapest.

BENCHES OR SOLID BEDS ?

As to whether benches or solid beds shall be adopted there is a wide division of opinion. The present-day trend is toward the latter, especially for American Beauty. The Hybrid Teas seem to flower more freely when planted in beds; on benches they exhibit a tendency to become dormant, and cease growth. Still, benches are in very common use and give abundant satisfaction, and in a private establishment the raised benches are usually the more convenient to manage. Again, the heating pipes will be run under the bench and generally a neater appearance is presented. The bed is certainly the more durable, and if the plants are to be carried over for more than the one year there is much to be said in its favour.

The benches should hold about four and a

half inches of soil and drainage may be provided by having the bottom pieces one-half inch or even one inch apart. In solid beds drainage material—broken stone—is filled in for a space of fifteen inches and a soil depth of six or seven inches allowed.

THE SOIL AND MANURE

The rose likes a rich soil. It is of prime importance to have proper soil. Without it the finest house will fail to produce good roses, and with suitable soil one can get along very well indeed in a make-shift sort of a house. In many small places where it is not practicable to give up one house entirely to roses, it is nevertheless possible to attain a tolerable result by paying strict attention to the soil requirements. Much has been written about soil for roses. That in certain districts better roses are grown than elsewhere nearby is abundantly true. All places are not equally well suited to roses, and this local adaptation is generally thought to rest upon the soil rather more than upon the climate. It is important that the amateur bear this in mind.

WHAT SOIL TO USE

The soil should be procured in the autumn before the planting season, in August or September, so that the winter may act upon it. By preference get soil from an old pasture that has not been cultivated for many years. A heavy loam from grass land that has been regularly grazed is the ideal basis of the compost heap for roses. A good, tough sod full of roots is to be sought. It is not the grass tops which the rose grower seeks, but the fibrous mass of root below. Having the soil, stack it just before winter in proportion of three parts soil to one of cow manure, layer upon layer, in a mound of convenient height—about five feet; it must not be too high nor too broad for the frost to penetrate. Let it remain here without any cover till spring. In this composting fresh manure can be used, but if the manure is added at the time the soil is chopped down in the spring, it must have been thoroughly rotted previously.

As soon as the weather in spring is “open” and the soil sufficiently dried out to be worked, the whole heap should be turned and allowed

to remain fully a month, when it is turned once more. Use a spade in these operations. One month before the soil will be carried into the house it should have the final turning, when bone meal (one part to fifty) or other fertiliser, as may be desired, may be added.

To a soil taken from a pasture yielding one ton of hay to the acre one-fourth of its bulk of manure may be added. Whereas a soil from a pasture cutting two tons to the acre will not need over one-eighth of its bulk of manure. At the last turning of the compost a dash of lime and bone meal may be given—but neither in large quantities. It will be better perhaps for the ordinary person to omit the lime—which is given only when there is an extra heavy soil—and apply the bone meal (or wood ashes) directly to the soil in the beds or benches as a top dressing before planting, at the rate of one bushel to a hundred-foot house of the standard width of twenty feet. Or figuring by weight, ten pounds each of bone meal and wood ashes, or bone meal and sheep manure, to two hundred square feet of glass, mixed with the soil in the bench or while turning outdoors, will be sufficient. Some growers add powdered

mica to modify a light and gritty or too sandy a soil.

VARIETY PREFERENCES

Different varieties of roses show preferences for different soils, but a soil prepared as described above will be found to give the best results with a majority. A soil that is good for almost all varieties will, if taken and rubbed between thumb and finger, have a mellow, smooth feeling. *Perle des Jardins*, *La France*, *Duchess of Albany* and *Niphetos* succeed best on a lighter type of soil, while the *Bride*, *Bridesmaid*, *Catherine Mermet*, *Madame Hoste*, *Papa Gontier*, *Souvenir de Wootton* and *American Beauty* require a heavy soil for their best development. It is obvious from this that the varieties to be grown should determine, in a measure at least, the nature of the soil to be used. It is generally conceded that roses grown on a clay soil produce blooms of better colour and substance than those grown on a lighter one.

PLANTING THE HOUSE—WATERING

Planting is done any time from the early part of May to the end of July. The aim

should be to get all the roses housed by July 1st, so that they can make a good growth during the rest of that month. Two weeks' growth then is worth twice as much in October or November.

The soil as previously prepared, by composting either in the autumn or spring, is brought into the house and put into the beds in benches which have been thoroughly cleaned. It is well to line the bottom of the bench with sod to hold in the soil, putting the grassy side downward. This is especially necessary when the boards of the bench are placed an inch apart, as is sometimes the case. Fill up the benches—three inches of soil is the proper depth for young roses—and apply such fertiliser as may be necessary, mixing it in thoroughly with the hands, at the same time picking out all stones and any other rough material. Finish it by leaving the surface of the bed rounded rather than level to allow for any subsequent settling. Don't pound the soil, and use a fork to break up any lumps if you like, but the most practical men use their hands as the levelling and finishing tool.

The actual work of planting is easy enough.

By means of a line mark off the beds so as to give the plants fifteen inches apart either way, at least. The young plants being in pots must be well watered a couple of hours before they are to be planted; they will then leave the pots readily and remain a solid ball. They must not be allowed to dry out at this time. Gently disengage the roots, place the plants in position no deeper than they were in the pots, and firm well by pressure on each side with the closed fist. The larger plants should be placed in the back rows. An essential detail in the planting out from pots, whether it be a rose or any other plant, is that the ball as it comes from the pot be loosened and softened, being careful not to break the roots. The object in view is to get the soil of the ball and that of the bench properly united so as to be as nearly as possible of one texture. As soon as they are all planted give them a good watering and they will immediately begin to make new feeding fibres. This watering is given close around the plants individually rather than over the whole bed. And this object may be assisted by leaving a slight shallow around the plant. After this they should

never suffer for want of water, neither should they be saturated at any time. Syringing overhead two or three times a day on very hot days is very beneficial, and all air possible, top and sides, should be given, leaving an approach for air on top at night. This treatment will make a sturdy growth and solid wood, which enables the plants to go successfully through a winter forcing campaign.

DISINFECTING THE BENCHES

Preparatory to filling the benches with soil it is necessary to disinfect the whole house. Burn sulphur on a hot sunny afternoon, shut up the house tightly as soon as the sulphur is well lighted, and leave all snug until the next morning. The benches must then be washed and cleaned inside and outside, and be given a good coat of hot lime wash. This will destroy any insect or spores remaining in the bench. This wash is prepared as follows: To nine pounds of unslaked stone lime add two pounds of powdered sulphur, and water. Pour the water over the lime and, when it commences bubbling, pour in the sulphur and stir until the sulphur is dissolved; then

put it on the bench hot. This sulphur in the bench will almost surely keep the roses free from mildew. This wash helps to preserve the wood of the benches and it kills any insects that may be lurking in crevices. A plain lime wash without sulphur may be used if desired. The whole of the house, walks, and under benches must be cleaned up and made tidy after the planting.

If planting is done during July the plants have to stand the strain of the hottest part of the summer, and it is during their management at this period that the foundation of ultimate success or failure is laid. The rose likes a moderately warm, moist condition, which must be provided by the grower.

WATERING

From the day the young rose plants are put into the benches they must be watered frequently and systematically. Eight times a day is not too often during the most trying period of the summer. There are great differences of opinion on the subject of watering, and there are hardly two growers who treat their plants alike. In cloudy, rainy weather the most careful manipulation of ventilating

and watering, coupled with the best judgment, are necessary to maintain the vigour and the health of the plants. It is not then safe to syringe, but moisture can usually be provided by dampening the walks.

One successful gardener on a private estate thus tells of his method of watering:

“The first good syringing is given at about 7 A. M., under rather than above the foliage, with the idea of removing any insect. The other six are given above the foliage, more to moisten the leaves and to stop too rapid evaporation from them. The point is this: Planted as they are under glass without shade, the evaporation through the foliage is more than the absorption by the roots. By this method I have found that the plants develop foliage more rapidly and of better substance, consequently are less susceptible to attacks of mildew.”

Of course care must be exercised that the beds are not made over-wet by this treatment. If so much time as this needs is not easily to be given, the number of syringings may be reduced to two, but they must of necessity be heavier and the water must be given equally to the soil and to the foliage. It is

to be observed that in the case of the frequent syringings the water is kept from the soil as much as possible. The amateur is much more likely to err on the side of giving too little water than he is to make the mistake of giving too much. The vigour of the plants must be kept up.

After the plants have been in the benches for two or three weeks they will be making a good growth and can be watered more freely. Keep the surface of the soil stirred and clear of weeds. But don't work too deeply—half an inch is enough.

GENERAL CARE, VENTILATION AND TEMPERATURE

From the time of planting, pay strict attention to the ventilation. The rose house must be well equipped with apparatus so that the required conditions may be kept up easily. Open the entire system every day from early morning until after sunset, when the house should be half closed. Aim to keep the temperature inside one or two degrees lower than the outside air during warm weather. To do this means to balance very nicely the two factors of (1) watering overhead, and

damping down the house generally; (2) admission of air. With full air on and ordinary conditions the desired effect is maintained by using the hose under the benches and on the walks. Above all things during the summer stage avoid letting the house get too warm. Sudden changes of temperature are most inimical and are sure precursors of disease. Although it may not be safe to syringe during dull days, we must at the same time watch for red spider, applying the remedy—water—at once if discovered.

MILDEW PREVENTION

As a preventive of mildew (one of the worst enemies during summer and autumn), if sulphur was not used in the whitewashing of the benches and cannot be used on the pipes it may be put on sheets of tin suspended from the roof. This is easier and much cheaper and more cleanly than dusting. But the best preventive of mildew during summer is abundance of air applied with judgment. When sulphur is dusted on the plants they should not be syringed for two or three days, and the temperature during daytime in that period run up to 85 and 90 degrees.

WHEN AUTUMN COMES

The most critical time of all is as we approach autumn, September and October. Changes in the atmosphere are then sudden and of great degree. The rose grower who has his house so piped that he can turn on a little—only a little—heat even during September is often very glad of his foresight. Sometimes for this purpose a single pipe is carried overhead in the ridge, or one on each side of the house near the eaves. The night temperature at that time should not drop below 60 degrees; it will be better to keep it at 65 degrees. The cold nights are very treacherous to the rose grower and he must be prepared. As the weather gets colder the fire heat is gradually increased so as to maintain 56 to 58 degrees at night for Teas, and 58 to 62 degrees for Hybrid Teas, except Meteor, which requires 10 degrees higher both day and night. In the ordinary rose house a day temperature of 65 degrees is to be kept up. When the thermometer inside shows one degree above the temperature outside open the ventilators on the side away from the wind and at the top one inch and

increase the amount of air as the heat inside rises. It is most important not to cause sudden changes. As a rule we have a good many bright days during September and October, with cool nights—ideal weather for rose growing. Put on plenty of ventilation then to harden the plants for the winter, and if the thermometer drops below 60 degrees at night, keep on a little fire and leave a “crack” open on the top ventilator, with the side ventilators closed.

SEVERAL VARIETIES IN ONE HOUSE

It is of course far better to have one kind of rose in one house—not necessarily one variety, but varieties so much alike that they accept similar treatment, as would be the case with *The Bride* and *Bridesmaid*, the two most popular roses for white and pink colours. This is not always possible on the private place, and a mixture becomes necessary; but try to reduce the number of varieties if the best results are sought. Much can be done in the heating arrangements to make the house suitable for mixed varieties by having one end cooler than the other. With 58 degrees at the warm end and 53 degrees at the

cool end in ordinary weather, dropping to 55 and 50 degrees in zero weather or below, quite an assortment can be handled satisfactorily.

A good selection for a private place for all purposes would be: The Bride, Bridesmaid, or Killarney, Perle des Jardins, and Souvenir de Wootton. Souvenir de Wootton is not equal to Meteor in colour, but it is impossible to grow the latter with the other varieties named, as Meteor needs a night temperature of 65 to 68 degrees, and a day temperature from 72 to 85 degrees. Kaiserin Augusta Victoria does best in a night temperature from 58 to 60 degrees. Papa Gontier and Souvenir de Wootton do best in a night temperature from 53 to 55 degrees, and a rise from 10 to 15 degrees on bright days. Perle des Jardins, Sunset and Papa Gontier will do in the cooler part of the house. American Beauty, the standard of merit in a rose for winter flower, should have a house of its own. It requires special treatment if it is to do its best, and further details for the management of that variety are given in another section. It is sometimes grown in a mixed house, where it occupies the centre bench

of an even span because it demands more head-room than the other forcing roses. Liberty is another excellent dark rose, but requires special treatment, and not everybody has succeeded with it. For a fuller list of forcing roses the reader is referred to the chapter dealing with varieties for special purposes.

ROSES GROWN WITH CARNATIONS

It is sometimes convenient to grow roses with carnations, on the principle that any roses are better than none. Such varieties as Papa Gontier, Souvenir de Wootton, Perle des Jardins, Madame Cusin, Niphetos, Ivory, and Golden Gate (that is the cooler kinds), can be grown with carnations providing the house is kept at 50 degrees at night. To grow these plants in such a temperature they require treatment a little different from that usually followed in forcing roses. They should be planted not later than July 1st, should be good stock from not less than three-inch pots, and grown liberally on till September 1st. Then gradually reduce the amount of water at the roots so as to get them accustomed to a less amount of humidity in the house than is usually given



A MODERN EVEN-SPAN ROSE HOUSE WITH RAISED BENCHES

The heating pipes are under the benches and the walks quite clear. American Beauty can be grown in the centre benches, other varieties on the sides. An amateur's house

for roses. They will show a firm, solid wood by the time the carnations are housed. From this time on the roses must be kept rather dry, and when watered be given only enough to moisten the soil through. Water should only be applied on bright days, and then early in the morning as soon as the sun is on the plants. The soil around the roots should be made as firm as possible soon after planting. About the middle of February or early in March the plants should have a good mulching of manure. By April they will want a larger proportion of water, but care must be taken not to get too soft a growth. This practice is followed on some places and good roses are cut all through the winter.

Liquid manure may be given as soon as the plants are well rooted through the bench, but it must be given with care. It is well to examine the roots from time to time to see that all is progressing favourably.

MANURING AND MULCHING

With the beginning of January generally, or after two crops of flowers have been cut, it will be time to feed. This can be done

either by a mulch or by watering with liquid manure made the colour of strong tea. For many reasons the liquid is better, although some growers prefer the mulch. In using a liquid you know when the beds are made wet, which is not the case if a mulch is on. For the latter use thoroughly rotted cow manure by preference. There is a fungus which grows on the manure and which greatly disfigures the flowers of the roses by producing little black specks, the appearance of which is avoided if the liquid is used.

In the liquid a mixture of various animal manures can be used—horse, sheep and cow. Apply every two weeks. If cow or horse manure liquid is used alone, four or five forkfuls to a barrel of water (fifty gallons) will give a strong enough decoction for use in the early part of the season. Of sheep manure take four to six quarts of the pulverized article as sold in the seed stores to a barrel of water, and let stand for a couple of days before use.

About March, when the sun begins to develop more power, mulch the beds with a dressing of thoroughly spent manure, such as comes from an old mushroom bed, or give

a mixture of well-spent cow manure and soil in the proportion of three to one.

If a chemical fertiliser is desired, the formula presented by Prof. W. M. Stuart (Vermont) may be tried:

6 ounces nitrate of soda.

12 ounces superphosphate.

6 ounces muriate or sulphate of potash.

Dissolve in fifty gallons of water and apply over 150 square feet of bench surface.

This is a quick-acting fertiliser and is prepared "for general results." Chemical manures should be tried on a small scale until they are understood. The best fertiliser for inexperienced hands is animal manure. A successful formula has been cow manure, one-half bushel; sheep manure, six-inch potful; and a five-inch pot of bone meal, to fifty gallons of water; or instead of sheep manure a four-inch pot of hen droppings may be used. Nitrate of soda or sulphate of ammonia, a three-inch pot to fifty gallons of water, gives excellent results.

CARRYING OVER

It is the general practice when roses are grown on any large scale to start the benches

afresh each year with new stock. This has been found to be the most satisfactory way, as fresh soil, clean benches and new, vigorous stock are all assured. But the plants can be "carried over" for a second, or third, or even fourth year. The method is to withhold water gradually, beginning at the end of June, until the beds are quite dry. The plants must then be carefully watched to prevent the wood from shrivelling. Syringing should be done daily, and if the weather is very warm twice a day. If the plants show signs of shrivelling a slight watering should be given but not enough to start the buds. At the middle of August the plants should be pruned. Remove all but the best wood and shorten the other. As soon as the cuts are healed give a good watering and then remove all loose soil; mulch with half manure and half soil; give plenty of ventilation night and day until the foliage shows a dark green colour. Treated this way the plants have a period of activity, and one of rest.

THE PLANTS TO USE

For growing on a small scale buy the plants all ready to set out. It saves a deal of trouble



A MODERN THREE-QUARTER-SPAN ROSE HOUSE

Solid beds have been provided here. They offer some advantage if the plants are to be carried over after the first year's cut of flowers. A country gentleman's greenhouse, not a florist's

if you can be sure of getting good properly developed plants propagated from healthy stock. Look out especially for the eel worm. This flourishes most vigorously in a dry soil and is now not common in commercial stock. The plant raiser is very particular for his own sake to clear out diseased plants, and he takes great precautions against eel worm by sterilising his soil with steam. The amateur is unlikely to attempt this. On the other hand, if the home stock is good it is well to propagate from that.

MAKING CUTTINGS

In home propagation the cuttings should be taken from the plants in the benches during January. Select flowering wood for propagation. Take the last (say) six eyes on the stem for cuttings, making them two or three eyed. Insert in a propagating bed in sand with a bottom heat of 70 degrees and a temperature of 55 to 58 degrees.

Before putting in the sand for propagation the benches should be thoroughly white-washed and drainage provided. Place the boards one-half inch apart, covering the cracks with either moss or excelsior; over

this a coat of crocking or cinders, making the whole about two inches deep; level evenly and beat down firmly. After this select good, coarse grit sand and place on a coat of at least two and one-half inches, beating it quite firm. Give the whole a good watering, and it is ready for the cuttings.

When inserting cuttings into the sand, draw a line across the sand about one or one and one-fourth inches deep with a blunt knife; place the cuttings in the channel thus made, pressing down firmly to the bottom of the cut. When the row is full press the sand firmly against the cuttings, and with a fine rose watering pot (not hose) give a good watering. Repeat this as fast as the cuttings are put in, and do not make too many at once, nor let them get dry at the base before putting into the sand. Should it be necessary to have strong fire heat to keep up the desired temperature (55 to 60 degrees, with 70 to 80 bottom heat), the cuttings should be syringed at least once a day, and if the sand shows the least indication of getting dry give another good watering. The floor of the propagating house should be kept moist all the time, so as to have a nice, moist atmos-

phere. When taking the cuttings be very careful to keep the leaf on. If that is allowed to fall off the chances are greatly against success. Keep a good circulation of air, as otherwise the cutting-bench fungus is likely to appear.

The cuttings will be rooted in about twenty or twenty-five days, which can be told by prying a few out of the sand by means of a wooden ladle or other similar handy article. If they have roots over one-half inch long they are ready to be potted. For this purpose use a mixture of loam three parts, sand one part, and rotted cow manure one part. Use two or two and one-half inch pots for the first potting and be sure to put them in firmly, pressing down the soil with the thumb and finishing off with a sharp rap on the bench. Place near the glass and water heavily only after a few days. In five or six weeks shift on to larger pots—three or four inch—using a compost as before with bone meal added at the rate of two quarts to a barrow load of soil, and don't omit to pot firmly. Some growers give the second shift in three weeks and another into six-inch pots five weeks later. Plants should be

bought from the grower not later than May.

The potted plants must be given attention as regards ventilation up to the end of April, giving air only at the ridge. Use the means already told for fighting mildew and fumigate with tobacco for aphids. After June 1st, air may be freely given top and bottom, syringing them as necessary about once a day to keep them growing.

PLANTS IN POTS

Tea Roses can be successfully flowered in pots instead of being put out into benches. For this purpose they are put back into the plunging material after the final shifting into six-inch pots and grown on until the middle of September. During August the amount of water is reduced so that they get a slight "rest." After being put into the house they are mulched to the top of the pot with a mixture of cow manure and ground bone, about twenty to one. Liquid manure is given in December, using the formula already advocated for the plants in the benches, but it can be given more often—once a week. These plants will commence to flower in

about two weeks after they are brought inside.

As the mulch gets spent it must be renewed about the middle of December. When the spring appears and growth is more natural the plants will take more water. In June they are to be taken out from the house and again plunged to the rim and after a little while gradually get dried off to rest, care being had of course that the wood does not shrivel. They can be shifted to larger pots after about a month. Prune in August by cutting out all but the strong young shoots. Water again as signs of new growth appear and put into the houses in September to be treated for another year as already described.

Hybrid Perpetuals are less popular than the Teas and Hybrid Teas. Their treatment differs from that accorded to the others because they are dried off more thoroughly and rested completely for several weeks. The pruning is done as for the garden plants in spring, but in September, when the wood is thoroughly ripe. They are then gradually brought into growth by watering and are removed indoors as soon as the buds are plunged and there is danger of frost. They

will flower in three months or a little more from starting. Begin in a low temperature—thirty-five degrees at night, gradually increasing to forty-five degrees at night, which is maintained until the buds are forming. After the buds are formed liquid manure can be given, the same as for Teas.

GROWING AMERICAN BEAUTY ROSES UNDER GLASS

The American Beauty Rose is one of the special high-class products of modern glass gardening. Its successful cultivation requires close attention to many details. These details, as understood by professional florists, are briefly set forth in this paper.

For propagating, use sharp sand, four inches deep, well firmed and kept at a uniform temperature of fifty-five to sixty degrees, and overhead temperature at from sixty to sixty-five degrees. The cuttings should be medium-sized wood with two eyes. Trim the foliage in such a manner as to prevent its lying on the sand and turning yellow from too much moisture. Shade for a few days by hanging light-weight muslin over the bench, but no closer to them than one foot from the top of

the bench. Give more space, if possible, to prevent condensation of moisture on foliage.

When the cuttings have made roots an inch long put them in two-inch pots and place them on a bench in the house with a temperature of fifty-six at night and sixty-eight in the daytime. Shade for a few days, as mentioned for cuttings. Paper shading is too dense and is likely to sweat them too much. For potting, use the same soil as for general planting, adding a very small quantity of bone meal. Shift into three-inch pots, then into four-inch, never allowing the plants to become root-bound.

Many a grower thinks additional bottom heat essential, but, while it will root the cuttings from three to four days sooner, it will be at the expense of the vitality and strength of the future plant. In the temperature described, the cuttings will usually take root in from thirty to thirty-five days.

As soon as they have roots from one-half inch to an inch long, they should be carefully lifted out of the sand and potted in two-inch clean pots. The best soil to put young roses into is a fresh loam. For the first

potting it should have but very little manure in it, and if of heavy nature a liberal proportion of sand ought to be added. In potting the plants be very careful not to break the young, tender roots.

When potted place them on the bench with some ashes or sand under them. Water with a fine rose, and should we have bright sunshine, give a syringing overhead at least twice a day, and for about a week shade them during the middle of the day from direct sunshine. Such plants make good, vigorous stock if kept growing steadily. Never let them get pot-bound at any time, and shift as required. The temperature should be kept as nearly as possible to that of the propagating house.

For soil, use five parts of the regular rose-house sod to one part of pure cow manure, put up the previous autumn and thoroughly mixed in the usual way, by chopping down and repiling at least twice before using. It is immaterial whether the soil is of clay or sandy nature, as good results may be obtained from either kind.

In planting, fill the benches with soil four inches deep, firming it before setting the

plants, which should be fifteen inches apart both ways. Leave a slight depression around the base of the plant in order that the ball may receive the direct benefit from a good watering after plants have been set. The subsequent waterings should be very carefully applied until heavy firing commences, when the plants will be better able to withstand water to a certain extent. That is, keep them on the "dry side." If not allowed to dry out, the earth will become sour and prevent root action. It is essential at all stages of growth to keep the plants growing without any checks, but do not force them or they will give poor results later in the season.

The plants should be disbudded. Pinch off the first crop of buds when they have shown colour. Have the plants well established before allowing them to bloom, being careful not to rob them of too much foliage. Use judgment between the strong and weak plants. When cutting the blooms from young or matured plants, their future growth should be taken into consideration. Try to determine how many "eyes" of the wood should be taken with the bud in order that they may "break" freely and to the best advantage.

Give plenty of fresh air, avoiding draughts. Moisten the walks twice a day in hot, dry weather; otherwise avoid too much moisture. Shading the glass has a tendency to make plants spindling. Keep the house as nearly as possible at fifty-eight to sixty degrees by night, and seventy to seventy-five degrees by day, excepting cloudy days, when it should be kept at sixty-five degrees. Ventilation should be given gradually, avoiding extremes. Letting the temperature run too high before giving air is likely to induce mildew, black spot and injury to the buds.

For mulching on the beds use half soil and half cow manure, composted and made fine under cover at least four months before using. Apply lightly in August, freely about January 1st, and a light application in April.

Syringing should be done on bright days only, commencing early in the day, but not before the sun is shining, in order that the plants may have time to dry off before sunset, particularly if the weather is too warm for firing. Syringing is not necessary on every bright day, providing red spider has been kept in check from the start. A good nozzle for syringing is made by taking a brass hose-



Spraying the foliage of roses under glass to keep down red spider. The spray is directed at the under side of the leaves

pipe ten inches long, attaching thereto a sprinkler three inches in diameter at right angles, with holes made a trifle larger than ordinarily used. With a water pressure of from seventy to eighty pounds directed to the under side of the foliage this spray will dislodge the spider without knocking the plants about as much as by the older methods.

Green aphid is likely to be troublesome. Do not wait until it makes its appearance. Smoke the houses weekly in the autumn with tobacco stems that have been moistened with water to prevent blazing. Discontinue when the mornings become too cold to admit giving plenty of air; then tobacco stems should be substituted, being suspended under the edge of the bench in poultry netting. Stems will last much longer used in this way, besides keeping the house sweeter and cleaner.

For mildew, paint the flow-pipes with sulphur mixed with water. This will not adhere as readily to the pipes as if mixed with oil or lime, but it will be more efficacious in emitting the fumes, and is not as injurious to the pipes. In warm weather, during the absence of firing, dust the plants with

sulphur mixed with air-slaked lime and apply with a bellows especially made for this purpose, or use "grape dust" in very much the same way.

The plants may be supported by using two wire canes or stakes five feet long (No. 8 wire) for each plant and held in position one foot from top of stake by a wire running lengthwise over the bench. To have straight stems and uniform foliage the growth should be kept carefully tied, giving all the room that is possible for light and air.

When the old plants have been discarded and the old soil removed, the bench bottoms, sides and corners should be thoroughly cleansed by scraping and brushing. Then fumigate with burning sulphur, and after the house has been sufficiently aired, white-wash inside of benches before filling with new soil. In this, as in other horticultural operations of importance, avoidance of trouble from fungous diseases depends largely on cleanliness and the establishing of antiseptic conditions. Especially is this true when successive crops of the same sort are grown under "forcing" methods.

Three-quarter-span houses of the usual

iron construction are to be preferred; the benches being four feet three inches by five inches deep. American Beauties are grown only on the two inside benches of the house. Good results are also obtained in houses of "even-span" with benches on the same level.

CHAPTER VII

TYPES AND RACES

Key to the horticultural groups—Types commonly grown—Time of blooming—The hardiest races.

A broad division of roses into two great natural classes may be made: (1) summer flowering and (2) summer and autumn flowering. While certain individual roses may be picked out as typifying the many groups into which these classes are again subdivided, such minute classification is not a practical one nowadays. The border lines have been overlapped in all directions so that for garden purposes a broader significance can be given to many of the old-time larger groups, ignoring the finer distinctions of the hair-splitting rosarians. For the average amateur an acquaintance with the Hybrid Perpetual, Hybrid Tea, Tea, Noisette, Multiflora (Rambler), and Rugosa and Wichuriana is all that is necessary. In many cases there are perpetual flowering forms of the

summer flowering groups, and climbing forms of many bush types are in cultivation, so that an exact classification long ago became difficult, and the condition is more trying as time sees new arrivals.

A KEY TO THE GARDEN GROUPS OF ROSES

CLASS I.—SUMMER FLOWERING ROSES, BLOOMING ONCE ONLY

- A. Large flowered (double).
 - B. Growth branching or pendulous; leaf wrinkled . . . Provence, Moss, Pompon, Sulphurea.
 - BB. Growth firm and robust; leaf downy . . . Damask and French, Hybrid French, Hybrid Provence, Hybrid Bourbon, Hybrid China.
 - BBB. Growth free; leaf whitish above, spineless Alba.
- AA. Small flowered (single and double).
 - B. Growth climbing; flowers produced singly Ayrshire.
 - BB. Growth climbing; flowers in clusters . . . Evergreen, Semper-virens, Wichuraiana, Cherokee, Banksian.
 - BBB. Growth short jointed, generally, except in Alpine . . . Briers, Austrian, Scotch, Sweet, Penzance, Alpine, Prairie.
 - BBBBB. Growth free; foliage wrinkled Pompon.

CLASS II.—SUMMER AND AUTUMN FLOWERING ROSES, BLOOMING MORE OR LESS CONTINUOUSLY

- A. Large flowered.
 - B. Foliage very rough Hybrid Perpetual, Hybrid Tea, Perpetual, Moss.
 - BB. Foliage rough Bourbon, Bourbon Perpetual.
 - BBB. Foliage smooth China, Tea, Lawrenceana (Fairy).
- ^A. Smaller flowered.
 - B. Foliage deciduous.
 - C. Habit climbing.
 - D. Cluster flowered Musk, Noisette, Polyantha, Wichuraiana hybrid.
 - DD. Flowers solitary Ayrshire Perpetual.
 - CC. Habit dwarf, bushy Perpetual Briers, Rugosa, Lucida, Blanda, Microphylla, Berberidifolia, Scotch.
 - BB. Foliage more or less persistent Evergreen, Macartney, Wichuraiana.

FEATURES OF THE MORE POPULAR GROUPS

ALBA OR WHITE ROSE.—A small group, little known. *Habit*: Free growing. *Foliage*: Whitish above; deep green below. *Prickles*: None, in type, but hybrids with other groups have prickles. *Flowers*: Light colours, medium size. Flower once. *Culture*: Adapted to any soil; prune closely. *Type*: Felecite Parmentier.

ALPINE OR BOURSALT.—*Habit*: Climbing; long, flexible, reddish-coloured shoots. *Foliage*: Glabrous, seven to nine leaflets, glandular. *Prickles*: Generally none. *Flower*: Purple or crimson, mostly; in large clusters. Bloom once. *Culture*: Adapted for shady places; prune by thinning freely, but leave flowering wood. *Type*: Amadis.

AYRSHIRE. — *Habit*: Climbing, slender shoots, rapid growing, fifteen to twenty feet in one season. *Foliage*: Five leaflets, dull above, sometimes pubescent beneath. *Texture* thin. *Prickles*: None or very few. *Flowers*: Produced singly, moderate size, two and one-half inches across. White to deep crimson. Bloom once. *Culture*: Hardy, but not so hardy as the Prairie Roses. Do

not require rich soil. Prune very little.
Type: Queen of the Belgians.

BANKSIA. — *Habit:* Climbing, slender; rapid grower. *Foliage:* Dark green, glossy, often only three leaflets. *Prickles:* None. *Flowers:* Small (one inch across) in umbels, once in the season—May. *Culture:* In rich soil in greenhouses in the North. Prune very sparingly. *Type:* Yellow (scented like violets).

BENGAL OR CHINA (Monthly Rose).—*Habit:* Moderate, branching growth three to five feet high. *Foliage:* Glaucous green, dark above, pale beneath, three to seven leaflets. *Prickles:* Brownish-red. *Flower:* Profuse when well grown. Not fragrant. Small. Produced all summer. *Culture:* Rich soil. Prune close. *Type:* Agrippina.

BOURBON.—*Habit:* Vigorous. Intermediate between Bengal and Damask, with great range. *Foliage:* Dark, lustrous, seven leaflets. *Prickles:* Various. *Flowers:* Light shades, generally with some purple, and produced in clusters all summer (some few do not bloom freely in autumn). *Culture:* Rich soil. Prune closely. If the shoots are cut back immediately after flowering bloom will be

continuous till frost. Moderately hardy.
Type: Hermosa.

BRIERS.—Austrian, Scotch, Sweet, Penzance. *Habit:* Short jointed, branching freely. *Foliage:* Small, spiny, fragrant in Sweetbrier. *Prickles:* Abundant, except in alpine. *Flowers:* Small. Yellow in Austrian. Short lived. Bloom once. *Culture:* Scotch grows well in sandy soil. Sweetbriers like a heavy rich soil. Prune by removing some of the oldest shoots. All are hardy. Do not respond greatly to high cultivation. *Type:* *Rosa spinosissima*.

Austrian Briers have chocolate-brown bark. Demand dry soil. Flowers, yellow. Type, Persian yellow.

Scotch Roses are excessively spiny and sucker freely.

Sweetbriers have fragrant foliage and decorative fruits. Flowers, light coloured and small.

Penzance Hybrid Sweetbriers are hybrids from the Sweetbrier, sixteen varieties, all good. Lord Penzance is the prettiest in colour, while Minna and Green Mantle are most fragrant. They should have a high trellis and be at least eight feet apart. To



THE BEST ROSE FOR HEDGES AND SEASIDE

Rosa rugosa, a Japanese species with thick, dark green, glossy wrinkled leaves. Free from insects and disease. The large red hips last into winter

prune, shorten back the over-vigorous growth and remove some of the oldest shoots.

DAMASK AND FRENCH.—*Habit*: Robust green shoots, vigorous grower. *Foliage*: Five to seven leaflets, downy, coriaceous. Pale green in Damask, dark green in French. *Prickles*: Very numerous in Damask; slightly fewer in French. *Flower*: Generally flat. Those of French Rose bleach in sunlight and develop perfume in dried petals. Damask Rose loses scent on drying. Flower once. *Culture*: Suited to any soil, very hardy. Prune by thinning out the abundant shoots. Generally superseded by the hybrid of other groups. *Types*: Mme. Hardy (Damask), Boule de Nanténie (French). *Variations*: *Hybrid French*, less robust, smoother, short-jointed wood. *Hybrid China*, derived from French, Provence, Noisette, or Bourbon. More diffuse growth, foliage shining, enduring late in the season. Very hardy, adapted to poor soils. Prune but slightly. The so-called Hybrid Perpetuals, which, however, bloom but once in summer, and which have helped to diminish the proper appreciation of that class, are properly Hybrid China Roses. *Type*: Mme. Plantier.

EVERGREEN (SEMPERVIRENS). — *Habit*: Climbing. Very vigorous. Reddish bark. *Foliage*: Dark green, retained late in the season. Seven leaflets, glabrous. *Prickles*: Hooked. *Flowers*: Scanty in corymbs, once in June. *Culture*: Hardy. Prune by cutting out entirely shoots that need thinning. *Type*: Félicité Perpetuelle.

HYBRID PERPETUAL.—The most important group for general garden cultivation. For practical purposes of the amateur all the sundry roses which bloom once in the summer and again more or less intermittently in the autumn are now included here. Hybrid China Roses differ from Hybrid Perpetuals in that they bloom once only, in summer. *Habit*: Various. Generally stiff, upright, sometimes inclined to pendulous. *Foliage*: Dull green, wrinkled, not shiny. *Prickles*: Various, generally strong and fairly abundant. *Flowers*: Of all types, partaking of Tea, Damask, French, Bourbon, etc., produced in summer and autumn. *Culture*: Good garden soil, rich and deep, inclined to heavy. Prune by cutting back, according to habit; if very vigorous, prune less severely than if weak, as heavy pruning tends too much to

wood production. *Examples:* Mme. Gabriel Luizet, American Beauty.

HYBRID TEA.—The most popular roses for all-round cultivation in the garden and under glass. *Habit:* Intermediate between that of the Tea and Hybrid Perpetual. *Foliage:* Rougher than in the Teas and slightly wrinkled; not so rough as in the Hybrid Perpetuals. *Prickles:* Generally large and strong, though not very abundant. Occasionally very few. *Flowers:* Of various types, generally well formed, with a large number of petals and an elongated bud. Bloom throughout the season. *Culture:* Same as for the Teas, except that as a class they require less protection. *Examples:* Killarney, Kaiserin Augusta Victoria, The Bride, etc.

MULTIFLORA (Rambler Roses).—*Habit:* Climbing or recurving; very vigorous, green shoots. *Foliage:* Bright green, slightly hairy, serrate, nine leaflets. *Prickles:* Abundant and strong. *Flowers:* In pyramidal corymbs, once in the season. *Culture:* Good, rich garden soil. Prune by cutting out old canes that have flowered. *Type:* Crimson Rambler. This group has been hybridised with

other climbing roses and is very uncertainly defined.

MUSK AND NOISETTE.—*Habit*: Slender shoots, half climbing, six feet in height. *Foliage*: Shiny, usually pubescent beneath five to seven leaflets. *Prickles*: Moderate in quantity, hooked, reddish. *Flowers*: Pale colours, including the best yellows, very fragrant, generally in clusters. *Culture*: Good garden soil; requires slight protection in winter. Treated generally as the Teas. Prune moderately. *Type*: Cloth of Gold (Chromatella).

PRAIRIE.—*Habit*: Climbing, rapid growing. *Foliage*: Five to seven leaflets, dark green, rough, large. *Prickles*: Stout and moderately numerous. *Flowers*: In clusters, once, late in the season. *Culture*: Any garden soil. The Prairie Roses thrive over a greater extent of territory than any other group. Prune but slightly, cutting out old canes as necessary. *Type*: Baltimore Belle.

PROVENCE.—*Habit*: Branching, pendulous and straggling. *Foliage*: Large, broad, wrinkled, deeply serrate. Seven leaflets generally. *Prickles*: Sometimes fine and straight, sometimes coarse and hooked.

Flowers: Large, globular, with a great number of petals. Very fragrant. Blooms once only. *Culture:* Rich soil; prune closely, unless very vigorous. *Type:* Cabbage Rose. *Sub-Varieties:* Moss Roses. Pompon, dwarf, with cupped flowers.

RUGOSA. — *Habit:* Dense bushes, short jointed. *Foliage:* Shiny, much wrinkled, very dark green, remarkably free from insect pests. *Prickles:* Numerous and stout, but small. *Flowers:* Single or double, produced intermittently throughout the season. Pink or white, followed by handsome fruits. *Culture:* Does well in any garden soil and is well adapted for seaside planting. Prune by cutting out nearly all old wood and shortening the remainder. *Examples:* Rosa rugosa, Mme. Georges Bruant.

TEA. — *Habit:* Slender growing bushes, branching freely. Bark smooth, shiny. *Foliage:* Smooth, shiny, never rough or hairy. Young growths often copper coloured. *Prickles:* Moderately abundant, or almost absent in some varieties. *Flowers:* Generally light coloured, darkened where exposed to the sun. Tea scented. Produced throughout the entire season—a really perpetual class.

Culture: Very rich soil, thoroughly well drained. Protection in winter is necessary except in the real South or in California. In the climate of the East and North the Teas are not hardy. Prune by cutting back hard. *Example:* Isabella Sprunt.

WICHURAIANA HYBRIDS (R. Wichuraiana × Teas or Hybrid Perpetuals). — *Habit:* Prostrate, slender; green bark. *Foliage:* Small, glabrous, nine leaflets, half evergreen. *Prickles:* Hooked, small. *Flowers:* Small, numerous, in corymbs, July to September. *Culture:* On any sort of soil; does well in all sorts of situations. Prune only as necessary to the overcrowded shoots. *Type:* Dawson. This is a new group of immense importance to American gardens, yielding the best climbing roses for porch or trellis.

WHEN THEY BLOOM

The Hybrid Perpetual varieties have one period of bloom, from about June 5th to July 5th. If judiciously cut back after blooming, some additional flowers may be expected in mid-autumn. But as a rule the term “perpetual” is a very misleading name with American conditions of climate. This is the



A NEARLY SINGLE FORM OF THE PROVENCE ROSE

The French rose and the Damask rose have been hybridised with the Tea and other China roses, producing the Hybrid Perpetual class, which includes nearly all the common garden roses

reason why so many people are disappointed, who expect these roses to flower freely a second time, as described in English books, which treat of English conditions. The Provence and Damask Roses also bloom between June 5th and July 5th.

The Teas, Hybrid Teas and Bourbons have two distinct periods of bloom, namely, from about June 15th to July 25th, and again from the beginning of September until cut down by frost.

The China (or Bengal) and Polyantha Roses bloom off and on at intervals throughout the season. Few of them attain to any great size of flower, and most of the Polyanthas bloom in clusters of miniature roses. But both are very useful at times, when few other roses can be had, and no garden of any large size should be entirely without them. They should be bedded apart from the larger growing varieties, for most of them are small growers; but this rule is by no means absolute; Eugène Beauharnais (Bengal) and Marie Pavie (Polyantha), for example, being very large bushes.

Rugosas, owing to their very bushy growth, should be in separate beds. Four feet between plants will be none too much. They

bloom once profusely, and off and on sparingly thereafter.

The climbers follow their races in periods of bloom, the climbing Perpetuals blooming once and the climbing Teas having two good periods of bloom. The Noisettes have the Tea habit; the climbing Hybrid Polyanthas (which includes the Ramblers), and also the Wichuraiana Hybrids, bloom but once.

The climbers of any given race take much longer to be established than the non-climbing varieties. Climbers, if planted in a row along a fence or trellis, should be at least four feet apart. Several varieties need twice the space between plants. Their soil should receive at least as deep cultivation as the ordinary rose beds and the plants themselves should not be forgotten, as they often are, when the food supplies are going around.

THE HARDIEST RACES

The Hybrid Perpetuals and Rugosas are absolutely hardy in the latitude of New York and for some distance north, and require no protection. Polyanthas do not need much, and indeed usually get along well enough without any overcoat. All other kinds are

more or less tender. If the owner is satisfied with a single month of bloom and cannot devote the necessary time and attention to protecting other varieties, then all the roses should be selected from among the Hybrid Perpetuals and Rugosas and the hardy climbers.

In any case, start with the very best field-grown plants that can be found. Inferior stock is dear at any price, and plants grown in greenhouses cannot be relied upon to survive the winter out of doors.

CHAPTER VIII

ROSES FOR SPECIAL PURPOSES

Abbreviations.—(B.), Bourbon; (D.), Damask; (F.), French or Gallica; (H.B.), Hybrid Bourbon; (H.C.), Hybrid China; (H.N.), Hybrid Noisette; (H.P.), Hybrid Perpetual, including some of the hybrid Bourbons; (H.T.), Hybrid Tea; (M.), Multiflora; (N.), Noisette; (P.), Prairie (roses derived from *R. setigera*); (R.H.), Rambler hybrids (Crimson Rambler, one parent); (T.), Tea-scented, (W.H.), Wichuraiana hybrid.

WE can have roses almost anywhere. It is even possible to have them in poor, sandy soil, but it is not possible to have the best double varieties without the best soil and the best care. There can be roses on walls, on trellises, on tree trunks, on arbours, in the city garden, at the seashore, and about the mountain home where your summer is enjoyed. There are roses that bloom in the summer, others that make the garden glow in autumn, and some that are so lavish with flower that they repeat their gifts of colour

and fragrance through the season. As a whole, the rose family asks for a deep, rich and heavy soil; but the Burnet, or Scotch, roses will thrive in sand; so will the Memorial, or Wichuraiana—and there are a score of excellent varieties derived from this which make rampant growth with almost no soil at all, and seem not to ask much care.

We have been so long trained to think and speak of roses as only for their individual flowers that whole groups and families of kinds that do not make a great display of specimen individual flowers have been almost lost to the sight of the ordinary individual. It is not true that all roses are ugly plants, to be regarded only as the means of producing glorious roses, and that therefore their proper place is in an out-of-the-way corner where they will never be seen. Roses there are which are as good material for the garden picture as any other of the flowering shrubs. Let us have roses about our homes, and in every garden. If there is no other possibility, plant a climber to ramble over the piazza and show its rose buds about the window frame. Elsewhere have walks of roses, arbours of roses, pillars of roses, roses climbing up, and

roses in wreaths hanging down, and, indeed, roses everywhere. Grow them for their colour, for their fragrance, and—because they are roses!

How to do this? Select the proper varieties of the proper groups, and, above all, don't put up a fight against the inherent nature of particular plants, for it will be a losing struggle, and there is no lasting pleasure in that sort of gardening. Certain conceits of rose culture demand special methods of setting about the desired end. Unless you are wonderfully favoured, standards are not possible under the usual method of permanent planting, and it then becomes necessary to take them into trenches each winter. Again, climate controls the rose grower; a garden of Teas and other of the tender roses which is an easy matter in the South and on the Pacific Coast is not a question of practical gardening in the East and the North. The gardener has to make his garden from the best possibilities, and the more this is realised the less apparent is the effort. American gardens have at hand a rich mass of available material for rose effects without a slavish adherence to the better known gar-

den roses of the Hybrid Perpetual and Hybrid Tea or pure Tea types. Even the native species are of importance, especially for shrubbery effects. What better than the bright red bark of *Rosa blanda*, massed, in the winter landscape! The Multiflora group, as represented by the now ubiquitous Crimson Rambler, has opened the eyes of thousands of suburban home makers to the possibilities of roses other than the ordinary. It is realised that there are roses for many purposes, and the Crimson Rambler itself has become a many-purposed rose. How great a reality it, and its contemporary arrival—the Wichuraiana—have become, will be better understood by a reference to the following lists. These two roses must be regarded reverently by the progressive rosarian on account of what has been accomplished through their acceptance as garden plants. They have helped the million to learn that there are roses and roses—and roses; that there are varieties for all kinds of purposes, and that a rose garden is a possibility anywhere if there is a foot or two of soil and a few rays of sunshine.

What everybody wants, and what we shall

never get is a perfect double rose that is fragrant, and borne in great profusion on a bush that is beautiful even when out of bloom, and which will grow without care, is free from insects and diseases and will not die in the winter. There are roses in Europe that come within a mile of this ideal, but rose culture in America is still in its infancy. Our climate is fundamentally different from that of Europe, and the roses of the future must be hybrids of the best double roses of the Old World with the hardy roses of Japan, which are better adapted for plant-breeding purposes than the wild rose of the Northeastern United States. Meanwhile we must endure the nuisance of budded roses. Many desirable varieties are not strong growing enough and have to be grafted upon the roots of stronger-growing species. The latter naturally throw out suckers which will strangle the choice variety unless they are watched daily and the suckers removed. By deep planting the budded part may be induced to make roots, and the original root dying, "own-root" plants will result. The common roses that everybody grows are the Hybrid Perpetuals, or H.P.'s as they are commonly called.

This class includes practically all of the important double roses that are supposed to be hardy in the North. This class has been created by hybridising the French Rose and the allied Damask Rose with the China Rose, of which the Tea Rose is the favourite type. The Tea Rose is the most fragrant and has the most beautiful bud of any Rose, but the main reason for crossing it with the roses of Western Europe is its ever-blooming character. The Tea Rose blooms intermittently all the summer and autumn, whereas the roses of western Europe usually give a lot of bloom in the month of June and do not flower again until the next year. Unfortunately the Tea Rose is not hardy, i. e., it will not survive the winter outdoors in cold climates, except in special locations, and with special treatment. Tea Roses are the glory of the South and of California and the delight of the Northern amateur who is willing to fuss with them. They need winter overcoats of straw or they must be covered a foot or two deep with manure to prevent the roots from freezing. The Hybrid Tea, a blending of the tender Tea and the H.P., is hardier than the Tea proper and gives some of the

most desirable roses; most of the modern favourites are of this class.

It is impossible to have the best roses and the best bush at the same time. The pruning and general cultivation are entirely different. The two purposes cannot be entirely reconciled. If you want the best double roses, your rose bushes are sure to be unsightly when they are out of bloom. If you want a rose bush that will look well through the season you cannot have the best double flowers. If you want the individual flowers you must grow flowers—not plants—by pruning hard each year in the spring, cutting back almost to the ground. In this climate the standard roses should be grown on the Dog Rose stock, every plant dug up in the autumn, laid in a trench, and covered for the winter. The standard is of service only to relieve the level monotony of a formal rose garden. It does not give larger flowers.

In the lists for special purposes, which follow, the object has been to present selections of the best varieties suited to each case. The lists, in other words, are not exclusive, but suggestive rather. The previously published statements of experienced growers have

been freely drawn from, and it is very interesting to observe how frequently certain varieties are named in widely separated parts of the country.

VARIETIES FOR A ROSE GARDEN (DR. HUEY'S LISTS)

All Hybrid Perpetual Roses do not do well in America, and some favourites in England and Ireland are utterly worthless here. In order to discover the best for this climate, Dr. Robert Huey, of Philadelphia, Pa., has been to considerable pains, and every Hybrid Perpetual in Dickson's catalogue has been thoroughly tested by garden cultivation. For this valuable and complete trial the thanks of all rosarians are due. The following varieties have all given good satisfaction:

White Roses, H.P.

Merveille de Lyon

White Baroness

Frau Karl Druschki

Margaret Dickson

Mabel Morrison

Gloire Lyonnaise

The last is an H.T. but is a vigorous grower, blooms only in June, and should be planted with this class.

Pink Roses, H.P.

Baroness Rothschild
Caroline d'Arden
Heinrich Schultheis
Her Majesty
Mme. Gabriel Luizet
Marquise de Castellane
Mrs. R. G. S. Crawford
Mrs. John Laing
Paul Neyron
Paul's Early Blush
Suzanne Marie Rodocanachi

Crimson and Carmine Roses, H. P.

Captain Hayward
Duke of Edinburgh
Duke of Teck
Duke of Fife
Étienne Levet
Fisher Holmes
General Jacqueminot
Oscar Cordel
Prince Arthur
Ulrich Brunner

The best of the very dark roses is Prince Camille de Rohan. Sultan of Zanzibar, Louis van Hotte and Xavier Olibo might also be tried. They are, however, weak growers, and do not often perfect their blooms.

Trellis Roses

Reine Marie Henriette
Gardenia



The wild *Rosa blanda* is unequalled for foregrounds of shrubbery belts. The bright red bark gives a needed touch of colour to the winter scene. It can be mowed down close to the ground every two or three years, when it will make fresh growth

Ard's Rover
 Paul's Carmine Pillar
 Rosa setigera
 Dorothy Perkins
 Queen Alexandra
 Crimson Rambler
 Lord Penzance Hybrid Sweetbriers

Reine Marie Henriette is undoubtedly the very finest trellis rose for the climate of Philadelphia. It is a vigorous grower, fairly hardy, and is a glory in June, while throughout the entire summer, and autumn until frost, many good blooms may be gathered. In pruning, the leading shoots should be cut back to a little above the trellis, and the laterals shortened to two eyes.

Hybrid Teas

Some of the Hybrid Tea Roses are hardy and vigorous in growth and constitution, and in freedom and size of bloom they surpass all other sections. About one hundred and fifty varieties have already been introduced, a few of which are excellent, some mediocre, and most worthless for our climate. After a trial of about eighty varieties, some fifteen are believed to be well worthy of cultivation here. There are some others that give good prom-

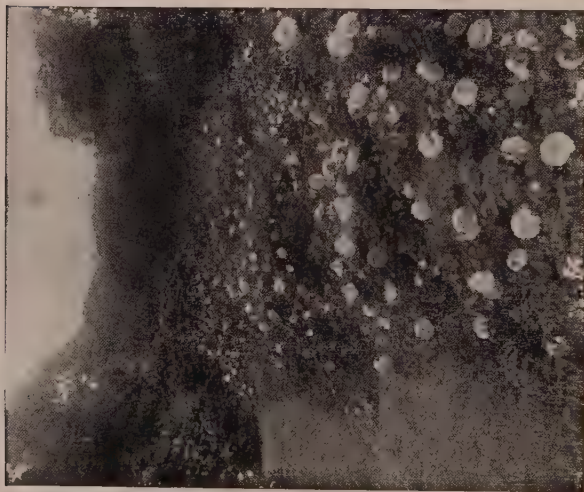
ise, but they are not sufficiently known to report upon. The following are recommended:

Killarney
Caroline Testout
Antoine Rivoire
Viscountess Folkestone
Souv. de President Carnot
La France
Kaiserin Augusta Victoria
Alice Grahame
Ellen Wilmot
Clara Watson
Mme. Abel Chatenay
Liberty
Gruss an Teplitz
M. Bunel
Reine Marie Henriette

Killarney is the most satisfactory rose in this or any other class for growing out of doors. The growth is strong and vigorous, perfume delicious, petals of great substance, colour most beautiful, and it is a free and continuous bloomer.

ROSES FOR VACATION HOMES

If the vacation home is occupied toward the end of the summer rather than at the beginning, plant about it those roses that



AN IDEAL ROSE BED FOR FLOWERS

Not for shrubbery. Cut back early to the ground every year



SUZANNE MARIE DE RHODOCANACHI

One of the best strong-growing pink H. P's. Flowers twice

flower in the autumn. Selection has been made for all-round qualities such as profusion of bloom, cutting, garden effect, variety of colour, and variety of type, as well as length of season, which will do well although given poor attention.

Bush Roses

Kaiserin Augusta Victoria (H.T.), white.
 Gruss an Teplitz (H.P.), crimson.
 General Jacqueminot (H.C.), dark red.
 Burbank (B.), pink, flowers till frost.
 Egan (W. H.), pink, always in flower.
 Mme. Plantier (H.N.), white.
 Souvenir de la Malmaison (H.T.), rich flesh.
 Mme. Caroline Testout (H.T.), silver pink.

Climbers

Debutante (W.H.), cherry red, flowers into time of frost.
 Seven Sisters (P.), crimson.
 Reine Marie Henriette (T.), bright cherry red.
 Baltimore Belle (P.), white.

ROSES FOR CITY GARDENS

In districts crowded with residences, with a minimum of light and air and a maximum of smoke and shadow, only the strongest roses of each group may be planted. A tolerable success may often be had even where the

smoke is that from soft coal. Of course roses must have some sunshine.

Hybrid Perpetuals, Dark

Baron de Bonstetten (H.P.), very dark red.
 Charles Dickens (H.P.), rose colour, large.
 Dr. Andry (H.P.), dark bright red.
 Dupuy Jamain (H.P.) brilliant cerise.
 General Jacqueminot (H.C.), dark bright red.
 Ulrich Brunner (H.P.), cherry red.

Hybrid Perpetuals, Lighter Shades

John Hopper (H.P.), lilac-rose with crimson centre.
 La France (H.P.), silvery pink.
 Mme. Gabriel Luizet (H.P.), pink.
 Magna Charta (H.P.), bright pink, suffused carmine.
 Paul Neyron (H.P.), pink. The largest of all roses.

Bourbons

Boule de Neige (B.), white.
 Mme. S. Cochet (B.), rose, edged white.
 Mme. I. Pereire (B.), rosy carmine.
 Queen of Bedders (B.), deep bright crimson.

Teas and Noisettes

Aimée Vibert (N.), white, clusters.
 Reine Marie Henriette (T.), cherry red.
 Gloire de Dijon (T.), yellow.
 Homer (T.), blush rose and salmon, variable.

Climbers

Crimson Rambler (M.), crimson.
 R. Wichuraiana, white, single.
 Also selections of the Rambler-Wichuraiana hybrids.

ROSES FOR SHRUBBERY

Flowers are here a secondary consideration. The bush must be shapely, free from insects and diseases and of easier culture than garden roses.

Climbers

R. setigera and its group of garden forms, red chiefly.
 Dundee Rambler (Ayrshire), white, good on tree trunks.

Bush—Single Flowered

Penzance Briers, white, pink to yellowish.
 Persian Yellow.
 The Scotch, white, pink, yellowish.
R. lucida, pink or white.
R. nitida, pink.
R. rubiginosa, pink.
R. rugosa, white or pink.
R. blanda, pink.

Bush—Double Flowered

A few hybrids of *R. rugosa*, white or red.
 Some Scotch roses, white or pink.
 The Egan, pink (W.H.).
 Austrian Brier, yellow.
 Harison Brier, yellow.

ROSES FOR EDGING WALKS

Select dwarf compact roses, not of free growth or else naturally dwarf bushes that can be cut back with impunity; such are the native species.

- R. multiflora nana—a dwarf form of the tall species; very free flowering, white.
- R. Chinensis, var. minima (R. Lawrenciana), one foot, crimson.
- The Scotch in variety: dwarf, arching, good in sandy soil, white to pink.
- Madame Norbert Levavasseur (R.H.), flowers when only a few inches high, crimson.

Mow These Down Every Year or Two

- R. blanda, pink, bright red back.
- R. lucida, white and pink.
- R. nitida, pink, hardy.
- R. rubiginosa, pink, sweet-scented foliage.

Train on the Ground or on a Frame

- Crimson Rambler and allied hybrids.
- R. Wichuraiana.
- R. multiflora.

ROSES FOR THE WILD GARDEN

They must be of the easiest possible cultivation, single, free growing and should be allowed to climb or trail at will over other shrubs. All the native species find a most appropriate place in the wild garden where they will flourish and attain a beauty of perfection not dreamt of in the fields; they should be located in a meadow-like effect. Any one who has visited the Arnold Arboretum in Boston will recall the richness of the

wild rose flora in the meadow and along the edges of the drives and walks. That is the model.

Multifloras Polyanthas. All native roses, especially *R. lucida*, *nitida*, and *blanda*.

ROSES FOR CLOTHING STEEP BANKS

These must be free or even rampant growers that will cover the surface quickly. A beautiful effect can be had in some situations by planting on the top of a mound and letting the growths trail down.

Downward Hanging

R. Wichuraiana, single white.

Débutante (Seedling from *C. Rambler*), soft pink, flowers twice.

Dundee Rambler (Ayrshire), white.

R. multiflora, white, large corymbs of single flowers.

Crimson Rambler, crimson.

Wichuraiana hybrids.

Philadelphia (*R.H.*), flowers before Crimson Rambler, almost same colour.

Evergreen Gem (*W.H.*), white, single.

Pink Roamer (*W.H.*).

South Orange Perfection (*W.H.*), rosy blush.

Sweetheart (*W.H.*), delicate blush.

Upright Bushes

R. lucida, pink or white.

R. blanda, pink.

R. setigera (semi-upright), and its varieties.

ROSES FOR CEMETERIES

Light-coloured roses that can stand neglect.
But don't neglect them!

For Flower Only

Maman Cochet (T.), pink; also a white form.

Hermosa (Bengal), pink.

Burbank (B.), pink, blooms till frost.

Mme. Plantier (H.N.), white.

For both Foliage and Flowers

R. rugosa, white form, also effective in fruit.

Mme. Georges Bruant (Hybrid of R. rugosa), white.

Harison Yellow (Brier), semi-double, easier to grow than the Persian.

Egan (W.H.), pink, makes a shapely bush, free from disease.

ROSES FOR VERANDAS OR PILLARS

If the arbours and arches are exposed to severe winter winds bend down the wood and bury it in a trench, leaving the roots undisturbed. Great things are now possible through the hybrids of the Crimson Rambler.

Crimson Rambler Type

Crimson Rambler (M.), crimson.

Dorothy Perkins (R.H.), bright pink.

Philadelphia (R.H.), like the Crimson Rambler, but earlier.



For shrubby single roses are most fitting, and the bush must be sightly all the season and of the easiest culture. The Altai rose (*Rosa spinosissima*, var. *Altaica*), a variety of the Scotch rose, has larger flowers and more vigorous habit than the type. It has white flowers succeeded by globular black fruit

Psyche (M.), pink, large flowers in clusters.
 Dawson (W.H.), a pink Rambler.
 Lady Gay (R.H.), bright, clear red, very striking.
 Débutante (W.H.), soft pink, small flowers until frost.
 Minnehaha (W.H.), dark rose, very double.

Other Types

Baltimore Belle (P.), white.
 The Ayrshire Roses (including Dundee Rambler), pink to red and white.
 Carmine Pillar (Single H.P.), very showy.
 Rosa setigera, pink.
 Queen of the Prairies (P.), crimson.

FOR SANDY SOILS OR SEASIDE

The favourite H.P. roses, if budded on the Dog Rose or Brier, can often be grown very successfully in such situations, but the one rose par excellence is *R. rugosa*.

Trailers

R. Wichuraiana, semi-evergreen, single, white.
 Gardenia (W.H.), a semi-evergreen, double white.
 Evergreen Gem (W.H.), a semi-evergreen, creamy white, single, large flower.

Upright

Egan (W.H.), pink.
Rosa rugosa and its hybrids, red to white.
 The Scotch, white, pink and yellowish.

Penzance Sweetbriers—including Brenda, Rose Bradwardine, Amy Robsart, Meg Merrilies, etc.—white, pink and orange.

ROSES FOR CUT FLOWERS IN WINTER

The following will bloom from autumn frost until May if properly managed. It is impossible to tell in advance of actual trial whether a rose will force easily and well and be acceptable to the public. The following are commercially successful in the East and are suitable for amateurs to grow. The list is based on a selection by the late E. G. Asmus.

The Unquestioned Leaders

The Bride (T.), white.
 Bridesmaid (T.), pink.
 Perle des Jardins (T.), yellow.
 Golden Gate (T.), blush.
 American Beauty (H.P. or H.T.), red.
 Liberty (H.T.), glowing crimson.
 Ulrich Brunner (H.P.), cherry red.

Other Favourites—Teas and Hybrid Teas

Mrs. Pierpont Morgan, cherry red.
 Madame Hoste, yellow,
 Mme. de Watteville, salmon-white.
 Ma Capucine, apricot.
 Sunset, deep apricot.

Kaiserin Augusta Victoria, white.

Meteor, very dark red.

Killarney, bright pink.

Hybrid Perpetuals

Baroness Rothschild, clear pink.

General Jacqueminot (H.C.), red.

Magna Charta, bright pink.

Gabriel Luizet, pink.

Paul Neyron, rose.

Anna de Diesbach, clear rose.

ROSES FOR POTS AT CHRISTMAS AND EASTER

Free-growing, cluster-flowered roses that are easily forced for either holiday. White and light colours are preferred for Easter, red for Christmas. Plants two to four feet high are generally preferred.

Crimson Rambler, the greatest favourite, grown naturally or trained into fantastic forms.

Madame Norbert Levavasseur—the Baby Rambler—is a dwarf hybrid from the above, crimson, flowers from three inches up.

Little Gem (Moss), pink.

Blanche Moreau (Moss), white.

Dorothy Perkins (R.H.), bright pink equivalent of the older Crimson Rambler.

Lamarque (N.), white, an old favourite now rarely seen.

Varieties of the Prairie group (e. g., Russell's Cottage) do well; all of rich crimson red shades, worth a trial by the amateur.

ROSES FOR GREENHOUSE DECORATION

Roses for this purpose should make a free growth and cover a good space in a season; therefore climbing roses are best. The larger-flowered kinds may be used for cut flowers also. Train the vines along the rafters, on a wire or upon a trellis against the wall.

The Cherokee—a very tender Southern rose (*R. lævigata*), flowers single, white and large.

Maréchal Niel (N.), yellow.

Niphetos (T.), white.

Reine Marie Henriette (T.), cherry red.

Gloire de Dijon (T.), creamy yellow.

Climbing, La France and other climbing forms of the popular varieties.

Banksia—useful if grown only for its foliage, small flowers, pale yellow or white, having the odour of violets.

ROSES FOR BOUTONNIERES

A gentleman who wears a rose bud in his coat lapel every day wishes a moderate-sized, compact, half-open bud of lasting quality. The following are adapted to this purpose (the Persian Yellow least of all), and are also desirable for garden decoration and cut flowers.



THE ONLY TYPE OF ROSE FIT FOR A LAWN

The common garden roses are worthless for landscape effects. *Rosa rugosa* is the best for this purpose, because its bush is always sightly and practically insect- and blight-proof. Blanc de Coubert, a semi-double white hybrid variety four to six inches across, blooms all summer.

Hardy

Common Moss, pink.
 White Bath (Moss), white.
 Persian Yellow (Brier), yellow.
 Blanche Moreau (Moss), pink.
 A. K. Williams (H.P.), dark red.
 General Jacqueminot (H.C.), dark red.
 Prince C. de Rohan (H.P.), dark red.

Tender

Catherine Mermet (T.), pink.
 Homer (T.), pink.
 Ma Capucine (T.), pink.
 The Bride (T.), white.
 Meteor (T.), dark red.
 Perle des Jardins (T.), light yellow.
 W. A. Richardson (N.), terra-cotta.

ROSES FOR THEIR FRUITS

For table decoration in winter:

Euphrosyne, small hips in large clusters.
 Thalia, small hips in large clusters.
 R. rugosa, large hips.
 Brenda, one of the Penzance Sweetbriers, is strikingly effective.

ROSES FOR GREAT MASSES OF FLOWERS

It is impossible to have the best flowers and the best bush at the same time. If roses are grown for a big floral display, the bushes or

vines are almost sure to be unsightly when out of bloom. Therefore, the rosarium or formal rose garden, which is designed for a big display of double flowers, should be in an enclosed, out-of-the-way place where it will not interfere with landscape effects. The following are excellent for entrances to rose gardens or hedges surrounding them:

Rosa Mundi (F.), striped red and white.

The Scotch, white to pink.

Mme. Hardy (D.), white.

Persian Yellow (Brier), yellow.

Crimson Rambler (M.), crimson.

R. rugosa, single, pink or white, best for hedges, always slightly.

Also the stronger growing popular varieties of the H.P. group as enumerated in the lists of resistant and town roses.

ROSES FOR "STANDARDS" IN FORMAL GARDENS

The object of "standards" is to break the low level of the rose beds. They fit formal gardens only, and are effective for an "avenue" effect on the sides of the principal walks. As ordinarily grown, standard roses are not successful in our gardens, as they suffer from bark scald in summer and they die in winter.

This list includes some roses that are notoriously not hardy in the East, but if the stems are of *R. canina* and are wrapped in moss in summer they will do grandly. Then for the winter dig up the entire plants and bury in trenches eighteen inches deep.

Reds and Pinks

Souvenir de la Malmaison (H.T.), rich flesh.
 General Jacqueminot (H.C.), deep red.
 Paul Neyron (H.P.), pink.
 Prince Camille de Rohan (H.P.), very dark crimson.
 Reynolds Hole (H.P.), extremely dark crimson.
 La France (H.T.), silvery pink.

Yellows and Whites

Gloire de Dijon (T.), pale yellow.
 Kaiserin Augusta Victoria (H.T.), white.
 Madame Falcot (T.), saffron yellow.
 Belle Lyonnaise (T.), deep canary yellow.
 William Allen Richardson (N.), apricot.
 Maréchal Niel (N.), yellow.

FOR HEAVY CLAY SOILS

All roses like a clayey soil, but the groups here named are especially suited for very heavy soil. Such soil should be lightened by plentiful admixture of well-rotted manure. If the soil is very stiff, the plants would best be on Manetti stock, when not on own roots. This

selection gives a good range of all colours except yellow.

The Bousalt group.

Damask group.

Hybrid Bourbon group.

ROSES FOR FOREGROUND

Dwarf-growing roses for fronting large beds or for use in the foreground of shrubbery borders where a double-purpose garden is maintained are very useful.

The Scotch (suckers very freely and must have plenty of room).

Gustave Piganeau (H.P.), eighteen inches to two feet.

Baroness Rothschild (H.P.), eighteen inches to two feet.

Fairy Rose, R. Chinensis, var. minima, known to the trade as R. Lawrenciana, very dwarf, crimson.

Mme. Norbert Levavasseur (R.H.), very dwarf, crimson.

ROSES IN SPECIAL RELATION TO MILDEW

Resistent Varieties

From notes and records taken at Elizabeth Park, at Hartford, Conn.:

Glory of Cheshunt (H.P.), crimson.

Comtesse Cécile de Chabrillant (H.P.), pink.

Victor Verdier (H.P.), bright rose.

Éclair (H.P.).

Dr. Andry (H.P.),

Madame Alfred Carrière (H.P.).
 Gloire de Dijon (T.).
 Reine Marie Henriette (T.).
 Madame Plantier (H.C.).
 Philadelphia (R.).
 White Bath (Moss).

Particularly Subject to Mildew

The Hybrid Perpetuals as a class may be said to be liable to mildew:

Captain Christy (H.T.).
 Mildred Grant (H.T.).
 Helen Keller (H.P.).
 Caroline de Sansal (H.P.).
 Madame Gabriel Luizet (H.P.).
 Jules Margottin, slightly (H.P.).
 Étienne Lever, slightly (H.P.).
 Eugene Furst (H.P.).
 Earl Dufferin (H.P.).
 Lady H. Stewart (H.P.).
 Marchioness of Lorne (H.P.).
 Blanche Moreau, badly (Moss).
 Crimson Rambler (M.).

THE MOST SWEETLY SCENTED ROSES

As a rule, roses must be either sweetly scented or large flowered to be really popular. A few famous roses have no appreciable odour, e. g., Baroness Rothschild, Victor Verdier, and Captain Christy.

Medium-sized Flowers

Damask (R. *Damascena* group), scent leaves petals on drying; pink and white.

French (R. *Gallica* group), scent retained on drying; all colours.

Moss group, white to pink.

Musk group, generally white, a few pink or red; most fragrant in a still moist atmosphere.

Noisettes, hybrids of the true musk; all colours.

Large Flowered

The Tea group; all are more or less scented with the characteristic tea odour. They require winter protection. Gloire de Dijon, yellowish, and Maréchal Niel (really a Noisette), yellow, are especially fragrant.

Hybrid Perpetuals: Paul Verdier, light red; American Beauty, red; Baron de Bonstetten, dark red; Comtesse de Chabillant, pink; General Jacqueminot, dark red; Sénateur Vaisse, brilliant red.

ROSES FOR CHICAGO

Compiled from Mr. W. C. Egan's reports. The climate of the lake shore is very trying, and the experience of years has given the following as the most reliable:

Bedding or Bush Roses

Prince Camille de Rohan (H.P.), deep crimson.

Magna Charta (H.P.), bright pink.

Mrs. R. G. Sharman Crawford (H.P.), red.

Capt. Christy (H.T.), white.



ULRICH BRUNNER

Cherry red ; most popular large-flowered H. P. Flowers intermittently



CRIMSON RAMBLER

Most popular climbing rose in existence. Hardy as a rock. Flowers in June and July

General Jacqueminot (H.C.), red
 Mrs. Paul (H.P.), violet-red.
 Louis Van Houtte (H.P.), red shaded amaranth.
 Crested Moss, pink.

Climbers

Seven Sisters (P.), crimson.
 Crimson Rambler (M.), bright crimson.
 Carmine Pillar (single H.P.), bright crimson.
 Dawson (R.H.), light pink.

ROSES FOR THE OHIO AND MISSOURI VALLEYS

By a rosarian in Kentucky. This is a betwixt and between territory, too severe for the real Southern roses, and yet decidedly warmer than the regular Eastern section. In the course of a tour these roses were noted as thriving best over the widest areas. This list shows how generally adapted to widely different areas are some of the best-known roses of the East.

Hybrid Perpetuals

General Jacqueminot (H.C.), dark red.
 Charles Lefebvre, bright crimson.
 Camille de Rohan deep crimson.

Cluster Roses

Pacquerette (Polyantha Perpetual), pure white, small.
 Hermosa (Bourbon), deep pink.
 Agrippina (Bengal), velvety crimson.

Tea and Hybrid Tea

- La France (H.T.), silvery rose.
Malmaison (H.T.), rich flesh.
Clothilde Soupert (T.), rosy carmine.
Duchesse de Brabant (T.), rosy pink.
Homer (T.), blush rose, variable.
Francisca Kruger (T.), coppery yellow.
Marie Van Houtte (H.T.), white tinted yellow.
Sombreuil (T.), white, tinged, rose.

ROSES FOR SOUTHERN CALIFORNIA

From Mr. Ernest Braunton's list. California is the land where Tea Roses can be grown outdoors. Its climate is more like that of southern Europe than the eastern United States, and almost every kind of rose can be grown on the Pacific Coast.

Bush

- Marie Van Houtte (H.P.).
Maman Cochet (T.).

Climbers

- Lamarque (N.).
Maréchal Niel (T.).
Reine Marie Henriette (T.).
Beauty of Glazenwood (C.).

ROSES FOR OREGON

Roses flourish in this region, and a list of selections can be regarded only as a guide to types—an immense number could be cited.

These are selected from reports of Mr. W. S. Sibson, Portland.

Hybrid Teas

La France, pink.

Madame C. Testout, silvery pink.

Viscountess Folkestone, creamy white, salmon centre.

Hybrid Perpetuals

Abel Carrière, very dark colour.

Baron de Bonstetten, very dark.

Capt. Christy, white.

General Jacqueminot (H.C.), crimson.

Gloire Lyonnaise, white.

Marie Baumann, bright crimson.

Ulrich Brunner, bright rose colour.

Victor Verdier, bright rose colour.

Merville de Lyon, very light, white shaded pink.

Clio, flesh pink.

ROSES FOR MISSOURI

From a local correspondent. The climate is trying and hardiness must be sought. Still there are surprises in store, as some of the Teas do well, with protection from frost in winter, of course.

Hermosa (Bengal), pink.

Malmaison (H.T.), rich flesh.

Kaiserin Augusta Victoria (H.T.), white.

Madame Caroline Testout (H.T.), silver pink.

Clothilde Soupert (T.), cherry red.

Homer (T.), pink.

Mme. G. Bruant (Rugosa hybrid), white.
Isabella Sprunt (T.), yellow.
Papa Gontier (T.), rosy crimson.
Marie Baumann (H.P.), bright carmine.
Coquette des Alpes (N.), white shaded rose.

TEA ROSES FOR OUTDOOR CULTIVATION IN
NEW JERSEY

List furnished by Mr. James M. Chapman,
Monmouth County, who is able to grow
Hybrid Teas by covering the plants with litter
a foot deep in winter.

Pink and Salmon

Augustine Guinoisseau, flesh pink.
President Carnot, pale pink.
La France, silvery pink.
Pink Maman Cochet.
Bon Silène, rosy salmon.
Mme. Abel Chatenay, salmon.

Red

Souvenir de Wootton, rosy red.
Liberty, glowing deep red.
Baldwin, deep red.
American Beauty, red.

White

Kaiserin Augusta Victoria.
White Maman Cochet.

Buff

Mme. Germaine Trochon.
Safrano.



PRAIRIE ROSES ARE UNEQUALLED FOR COVERING
TREE TRUNKS

The Baltimore Belle, a cluster rose of this group, flowers eight months of the year in California, and under the best conditions grows thirty or forty feet high at Del Monte. It is equally valuable in the East as a climbing rose on tree trunks, trellises, posts, etc. Tie or tack the main branches when planting

ROSES FOR ONTARIO

Captain C. R. Hext, Brantford, grows all these H.P.'s with slight protection, in order to insure complete safety, although they are hardy and grow in the southern part of the province without protection. After repeated trials of giving protection with leaves, long straw, manure, etc., success with Teas is still lacking.

Alfred Colomb
 Anna de Diesbach
 Baroness Rothschild
 General Jacqueminot
 Jules Margottin
 Louis van Houtte
 Mabel Morrison
 Magna Charta
 Marie Baumann
 Merveille de Lyon
 Paul Neyron
 Prince Camille de Rohan
 The Prairie Roses, for climbers

ONE HUNDRED GOOD ROSES FOR THE LATITUDE OF NEW YORK

By Commander Aaron Ward. The assortment of one hundred roses named in the following list includes the leading varieties found satisfactory in the North, when given

the general treatment recommended elsewhere in this book. The color division is rather arbitrary, and in the case of Teas and Hybrid Teas it indicates merely the principal or primary colour of the beautiful combinations found in these roses. Single roses, Luteas, Damasks, Wichuraianas and others of interest only to the general collector are intentionally omitted.

BUSH ROSES

WHITE.—*Bourbon*: K. P. Victoria, Souv. de la Malmaison. *Bengal*: Ducher. *Polyanthas*: Étoile de Mai, Marie Pavie. *Rugosa*: Blanc Double de Coubert, Mme. G. Bruant. *Tea*: White Mme. Cochet. *Hybrid Teas*: Augustine Guinoisseau, E. Wilmot, Innocence, Kaiserin, Mme. J. Combet, Souv. Pres. Carnot. *Hybrid Perpetuals*: Frau K. Druschki, Margaret Dickson, Merveille de Lyon.

PINK AND WHITE.—*Teas*: Anna Ollivier, Comtesse de Turenne. *Hybrid Teas*: Antoine Rivoire, Clara Watson, Grace Darling, Lady Clanmorris, Prince de Bulgarie, Vis. Folkestone. *Polyantha*: Clothilde Soupert.

PINK.—*Teas*: Boadicea, G. Nabonnand, Maman Cochet. *Hybrid Teas*: Belle Siebrecht, Camoens, Ferd. Jamin, Killarney, Mme. C. Testout, Mme. J. Grolez, Papa Lambert. *Hybrid Perpetuals*: Anna de Diesbach, Baron de Rothschild, Mme. Gabriel Luizet, Mrs. John Laing, Mrs. R. S. Crawford, Paul Neyron. *Bourbon*: Mrs. Paul. *Rugosa*: C. F. Meyer.

SALMON.—*Tea*: Souv. de C. Guillot (tender). *Hybrid Tea*: Mme. A. Chatenay. *Bengal*: Aurore, Queen Mab (tender).

BRIGHT RED.—*Teas*: Jules Finger, Souv. J. B. Guillot (thin). *Hybrid Teas*: Gruss an Teplitz. *Hybrid Perpetuals*: Alfred Colomb, Comtesse d'Oxford, Éclair, Fisher Holmes, La France of '89, Mme. Victor Verdier, Marie Baumann, Ulrich Brunner. *Polyanthas*: Leonie Lamesch, Mme. N. Levasseur.

DARK RED.—*Hybrid Tea*: Étoile de France. *Hybrid Perpetuals*: G. Lefévre, E. Furst, Jean Liabaud, Louis Van Houtte, Prince C. de Rohan, Souv. de W. Wood, Victor Hugo.

LIGHT YELLOW.—*Tea*: Marie Van Houtte. *Hybrid Teas*: Amateur Teyssier, F. Deegen,

Mlle. H. Cambier, Mme. Pernet Ducher. *Bengal*: Frau S. Roeloffs. *Polyantha*: Perle d'Or.

DARK YELLOW.—*Teas*: Doctor Grill, Francisca Kruger. *Hybrid Teas*: Le Progrès, Mme. H. Leuillot, Mme. Ravary. *Bengal*: Mme. E. Resal. *Polyantha*: Eugenie Lamesch.

CLIMBERS

WHITE.—*Prairie*: Baltimore Belle. *Polyantha*: Thalia.

BRIGHT RED.—*Tea*: Reine Marie Henriette. *Rambler*: Crimson Rambler. *Noisette*: Reine Olga. *Hybrid Perpetual*: Ard's Rover.

YELLOW.—*Polyantha*: Aglaia. *Tea*: Duchesse d'Auerstadt. *Noisettes*: Bouquet d'Or, Rêve d'Or.

VIOLET-ROSE.—*Multiflora*: Helene.

CARMINE AND YELLOW.—*Tea*: Souvenir de Mme. L. Viennot.

PINK.—*Bourbon*: Climbing Malmaison. *Polyantha*: Euphrosyne. *Prairie*: Prairie Queen.

SALMON SHADES.—*Tea*: Mme. Bérard. *Noisette*: W. A. Richardson.

ROSES THAT CAN BE EASILY BOUGHT

Of the thousands of roses that have been introduced to our gardens, a great majority are not known in the American trade to-day. Some are not suited to the climate, others are not sufficiently distinct from some others to merit a place, or there may be reasons of a trade nature why certain roses are not offered to the amateur here. It is of interest to know just what varieties may be ordered with a reasonable certainty of having the order filled without undue delay. The following list is compiled from the catalogues of wholesale importers and the auction sales lists. Rose specialists will be able to supply others not named here, but these are the roses in best actual demand:

Hybrid Perpetual

- Abel Carrière, dark crimson purple.
- Alfred Colomb, brilliant crimson.
- Baroness de Rothschild, light rose.
- Capt. Christy, delicate flesh coloured.
- Celine Forestier, rich yellow.
- Comtesse Julie de Schulenberg, dark red.
- Duke of Edinburgh, very bright, rich scarlet crimson.
- Duke of Teck, clear vivid scarlet crimson.
- Elizabeth Vigneron, pink.
- Emperor, dark crimson, nearly black.
- Frau Karl Druschki, snow white.

General Jacqueminot, glowing scarlet crimson.
Gloire de Bourg La Reine, dark red.
Gloire de Margottin, red.
Jules Margottin, brilliant glossy pink.
Magna Charta, bright pink.
Marchioness of Lorne, rich red, shaded carmine.
Margaret Dickson, pure white.
Marie Baumann, carmine.
M. Boncenne, velvety blackish crimson.
Mrs. John Laing, soft rosy pink.
Mme. Chas. Wood, brilliant red.
Mrs. R. G. Sharman Crawford, clear rose, pink and pale flesh.
Paul Neyron, deep rose.
Paeonia, light red.
Perle des Blanches, white, pale centre.
Princess de Bearn, dark crimson.
Suzanne Marie de Rodocanachi, deep scarlet.
Tom Wood, cherry red.
Ulrich Brunner, cherry red.
Victor Verdier, cherry.
Victor Hugo, brilliant crimson.

Teas, Hybrid Teas and Noisettes

Amabilis, pink.
Belle Siebrecht, bright rosy pink.
Dr. Grill, coppery yellow, shaded with light yellow.
Duchesse d'Auerstadt, bright golden yellow.
Duchess Hedwig Aremberg, pink, dark centre.
Étoile de Lyon, sulphur.
George Schwartz, dark canary yellow.
Gloire de Lyon, carmine, shaded with amber and cream
Grossherzog Ernest Ludwig, bright red.
G. Nabonnand, light rose yellow.

- Gruss an Teplitz, crimson scarlet.
 Helen Gould (Baldwin), rosy crimson.
 Jubilee, velvety crimson.
 Kaiserin Augusta Victoria, white.
 L'Innocence, purest milk white.
 Maman Cochet, deep flesh colour.
 Marie Van Houtte, lemon yellow, edged rose.
 Meteor, silvery crimson.
 Mme. Abel Chatenay, rosy carmine, shaded with salmon.
 Mme. Emil Souffrain, dark yellow centre, pink outside
 and light yellow.
 Mme. Francisca Kruger, coppery yellow.
 Mme. Jos. Combet, cream white shaded rose.
 Mme. Jules Grolez, silver rose, shaded with yellow.
 Mme. Lombard, rosy bronze, shaded with carmine.
 Mme. Pierre Cochet, yellowish white, centre deep yellow.
 Mme. Wagram, saintly rose and rosy flesh, changing to
 Chinese red.
 Papa Gontier, bright rosy crimson.
 Perle des Jardins, pale yellow.
 President Carnot, bright rose.
 Princess de Sagan, velvety crimson.
 Queen's Scarlet, rich velvety scarlet.
 Souvenir de Catherine Guilot, coppery orange red,
 yellow base.
 Souvenir de la Malmaison, rich flesh colour.
 Souvenir de Wootton, rich velvety red.
 Viscountess Folkestone, creamy pink, centre salmon.
 W. A. Richardson, deep orange yellow.
 White Maman Cochet, white.

Climbing Roses

- Aglaia, the yellow Rambler.
 Baltimore Belle, double white.

Clothilde Soupert, white.
Euphrosyne, pink Rambler.
Heléne, light rose.
Jules Margottin.
Kaiserin Augusta Victoria.
La France.
Meteor.
Prairie Queen, pink.
Pysche, pink.
Thalia, white Rambler.
Zepherine Drouet, practically thornless rose, beautiful pink.

Sweetbrier Roses

Amy Robsart, deep rose.
Edith Bellenden, pale rose.
Flora McIvor, white tinged with rose.
Green Mantle, pink, white centre.
Lady Penzance, coppery, tinted yellow.
Lord Penzance, fawn colour.
Lucy Pertram, deep crimson, white centre.
Meg Merrilies, crimson.
Rose Bradwardine, clear rose.

Bengal or Monthly Roses

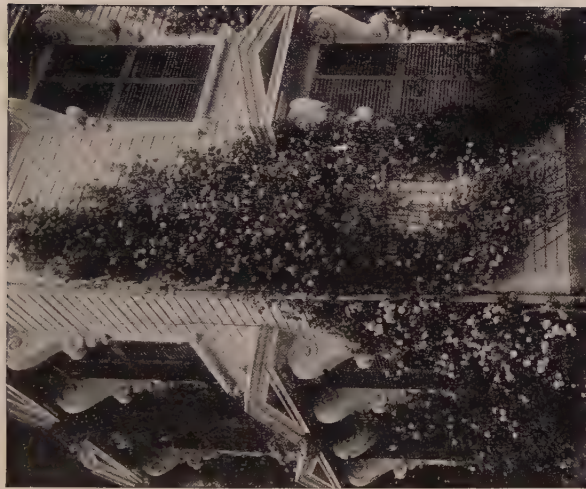
Agrippina, red.
Fellemborg, red.
Hermosa, pink.

Moss Roses

Blanche Moreau, pure white.
Captain Ingram, rich crimson.
Chapeau de Napoleon, red.
Comtesse de Murinais.
Crested Moss, pale rosy pink.
Crimson Globe, dark carmine red.



Roses for arbours should look well when out of bloom. Crimson Rambler doesn't; Wichuraiana does. It has small single flowers and evergreen foliage



For covering a house. This old rose at Norfolk, Conn., was planted in 1799 and is still flourishing, though it has had its troubles

ROSES AS VINES

Doctor Berthier, brilliant cherry red.

Glory of Mosses, carmine rose.

Madame Moreau, red vermillion.

Madame William Paul, clear rosy.

Red Moss, red.

Salet, vivid rose.

White Moss, white.

White Perpetual, white.

Polyantha Roses

Clothilde Soupert, ivory white, shaded with silvery
rose.

Gloire de Polyantha, citron rose, pale carmine.

Marie Pavie, creamy white, edged with carmine rose.

Mosella, chrome yellow.

Mignonette, clear pink, passing to white.

Pacquerette, small, pure white.

Perle de Rouge, velvety crimson.

Red Pet, red.

White Pet, white.

Rugosa Roses

Double Red Rugosa.

Double White Rugosa.

Mme. Georges Bruant, white.

Single Red Rugosa.

Single White Rugosa.

American Hybrid Ramblers

Dorothy Perkins, pink.

Evergreen Gem, creamy white.

Philadelphia, like Crimson Rambler.

Pink Roamer, pink, silvery white centre.

South Orange Perfection, rosy blush.

Universal Favorite, rose colour.

European Hybrid Ramblers

Adelaide Moulle, pink.

Alberis Barbier, canary yellow.

Auguste Barbier, pink.

Edouard Proust, flesh colour.

Electra, double yellow.

Elisa Robichon, free flowering, rose yellow shades.

François Foucard, yellowish white.

Paul Transon, double rose coloured.

Queen Alexandra, very free flowering, semi-double, red flowers. Like the Crimson Rambler.

Rubin, dark red.

CHAPTER IX

ROSES OF AMERICAN ORIGIN

AMERICA has contributed comparatively few roses to the great list of varieties popularly known to-day. Yet two important groups are credited to us. About the year 1814 the first of the Noisette class was raised—a class that has in it some of the most pleasing of all cluster roses. John Champney of Charleston, South Carolina, fertilised the White Musk with pollen from the Blush China, which was named Champney's Pink Cluster. A Charleston florist raised a seedling from this which he sent to his brother in France—Louis Noisette—about 1817. From this beginning the charming class of Noisettes (which properly, however, should have been called Champney Roses) was raised and distributed. The modern members of this group having a large admixture of Tea in them are not quite hardy. Some of the greatest of the yellow roses are of this section,

including Maréchal Niel and Chromatella.

From that one notable beginning little was done until quite recently, when the immense possibilities of the multiflora group (as exemplified in Crimson Rambler) and Rosa Wichuraiana gave a new impetus to rose production in America. We are to-day only beginning to realise the development in this group, which bids fair to be one characteristically American. These varieties answer the requirements of the average American garden better than many other plants, and though not roses of the older type, which will always be grown for cut flowers, still they are roses and fill a place in the garden and about the porch that no other plants have done so far.

WHAT THE RAMBLER AND MEMORIAL ROSES HAVE GIVEN US IN TEN YEARS

In 1893 the Wichuraiana Rose was first introduced into this country from Japan, by Mr. Jackson Dawson, and since then has steadily grown in favour for the several purposes to which it is so well adapted. It is a most interesting species, being hardy, pure white

single flowers, and resplendent green foliage. It has proved a valuable variety for hybridising purposes, and from this plant as a seed-bearing parent several hybridists procured new varieties of the highest merit.

The Crimson Rambler, from Japan, was also introduced in 1893, and it is safe to say that more plants of this variety have been sold than of any other rose for outdoor cultivation. As a parent it has produced some varieties of the highest merit.

These roses may be grown as ground roses if so desired, or they may be trained as climbers for porches, trellises, archways or specimens on rustic posts. They grow vigorously in ordinary soils well enriched with manure, and are seemingly very free from attacks of insects.

One of the most progressive of modern hybridists is Mr. Walsh, of Woods Hole, Mass., who has given these:

Débutante (Wichuraiana and Baroness Rothschild), with double flowers two and one-quarter inches in diameter, pink, fragrant; September until frost; a desirable acquisition to the climbing roses. It is perfectly hardy.

Sweetheart (Wichuraiana and Bridesmaid)

has flowers double, borne in clusters, hanging gracefully. The flowering season continues for six weeks, and some flowers may be seen until frost. This may be classed as a semi-evergreen variety, since the foliage remains on the stems until February and the small shoots retain their leaves the whole year.

Minnehaha (Wichuraiana and Paul Neyron) has dark rose flowers, borne on large trusses on long, stout stems. The foliage is light glossy green, hardy.

Evangeline, has flowers two inches across, single, pure white.

Lady Gay (Wichuraiana and Bardou Job) experts have pronounced to be the best of Mr. Walsh's hybrids. The colour is a combination of cherry pink, touched with vermilion, fading to pure white. It produces canes twelve to fifteen feet in length in one season, and so is admirably suited for trellises, porches, pergolas, etc. This is a fine forcing rose for Easter decoration.

Hiawatha (Wichuraiana hybrid), is very floriferous; a bright crimson single flower, the base of petals white.

Wedding Bells, a seedling from Crimson Rambler, is most floriferous. Some plants

in eight-inch pots at this writing have by actual count 300 flower buds on a plant. This is very distinct in foliage, a very light green colour with soft woolly texture, mid-ribs of leaves bright red. The flower is pink in the upper half of petal, white below; semi-double.

W. A. Manda, South Orange, New Jersey, introduced in 1897 and 1899 a number of very distinct climbing roses, with R. Wichuraiana as one parent. They are practically evergreen.

Evergreen Gem, colour buff, changing to almost white, sweetbrier perfume.

Jersey Beauty, pale yellow, large single flowers, with bright yellow stamen, very striking.

Manda's Triumph, double white, flowering in clusters, sweet scented.

Pink Roamer, bright pink.

South Orange Perfection, white, tipped with pink.

Universal Favourite, double pink flowers, very fragrant.

Mr. Jackson Dawson, Arnold Arboretum, Boston, Mass., has also produced some splendid varieties, raised from the Wichurai-

ana, among them the *Dawson*, vigorous grower, branches covered with double pink flowers.

The Farquhar, sent out in 1903 by R. and J. Farquhar, is a grand variety, bright pink flowers, shiny foliage, a *Wichuraiana* hybrid, suitable for climbing or as a ground rose.

W. H. Egan, another of the *Dawson* hybrids, was raised from *R. rugosa*. It has double pink flowers in clusters. The bush is compact, foliage moderately glossy and very free from insects. Always in flower.

The Jackson Perkins Company introduced *Dorothy Perkins* in 1903; it is pink shading to white, and can be described as a pink Rambler.

THE MIDDLE ERA

The time between the two famous groups named above was bridged by a number of roses of various types, important in their day, and of which there is definite record as follows:

Belle Americaine, raised by Daniel Boll, of New York, in 1837, and also *Mme. Boll*, H. R., a grand rose and a favourite to-day with many.

Cornelia Cook, very large, pure white Tea, for years the favorite white for forcing, raised by Anthony Cook, of Baltimore, Md., in 1855.

Anna Maria, Superba, Mme. Caroline Allen, Baltimore Bell and *Queen of the Prairies*, all raised by the late Mr. Feast, of Baltimore, in 1843. The two last-named varieties are well known by the people at large as hardy climbers suitable for almost any climate and position. Many million plants of these are now in general cultivation in every section of this country.

Harison's Yellow, raised by the Rev. Harison, New York, in 1830, is well known as a lovely colour when in bloom, and as hardy as an oak tree.

Beauty of Greenmount, 1854; *Dr. Kane*, 1856, and *Geo. Peabody*, 1857, all raised by Jas. Pentland, of Baltimore.

Mrs. Hovey and *Triumphant*, 1850, two good pillar varieties, raised by Joshua Pierce, Washington, D. C.

James Sprunt, Bengal, 1858, and *Isabella Sprunt*, Yellow Tea, 1865, two good varieties for many years; very popular; both raised by Rev. James Sprunt, Kenansville, N. C.

Mrs. Degraw, Bourbon, a grand summer

bedding variety, raised by Wm. Burgess, Glen Cove, L. I., 1885.

Marshall P. Wilder, H. R., a very beautiful variety and one of the best of its class, raised and introduced by Ellwanger & Barry, Rochester, N. Y., 1885, and *Rosalie*, another gem, by the same firm in 1884.

Golden Gate, Tea, by Mr. Jones, of New Orleans, about 1888.

American Beauty. Though not an American variety, yet the credit of bringing it into popularity is due to the energy and foresight of one firm in this country, Messrs. Field Bros., of Washington, D. C.; the correct name of this rose is Mme. Ferdinand Jamain; raised in France but of no particular value there.

America (Noisette), raised by C. G. Page, 1859, a very nice climber but not quite hardy.

Peter Henderson & Co. have introduced some very beautiful varieties—they are:

Setina, 1859, a sport from *Hermosa*, of climbing habit and not as widely planted as its merits deserve.

American Banner, 1879, a striped form of *Bon Silene*, of no great value, except as a novelty.



Roses of various types planted freely with herbaceous perennials make a gorgeous show of colour in June, and the general effect is pretty

Sunset, Tea, 1883, a sport from *Perle des Jardins* and an acquisition to our list of forcing roses, being of a rich salmon shade of orange.

Dinsmore, H. R., 1886, very similar to *Mme. Chas. Wood*, but a better constitution; a free, continuous, blooming variety for summer bedding.

Ruby Gold, Tea, 1892, raised by Mr. T. O'Connor, of Providence, R. I.; it has an interesting history. Mr. O'Connor grafted *Catherine Mermet* on *Maréchal Niel*, and it was from this graft that the sport was obtained.

Jubilee, H. P., 1897, raised by Mr. M. H. Walsh, of Woods Hole, Mass., from seed of *Victor Hugo* × *Prince Camille de Rohan*. Its brilliant flaming crimson, with maroon shading and large size ranks it among the most distinct of its class.

Mr. John Cook, of Baltimore, Md., has given us some really good roses in

Souvenir de Wootton, 1888, seedling of *Louis Van Houtte* × *Bon Silene*, a very valuable rose, deliciously sweet, of large size, bright cherry crimson, very free flowering.

Marion Dingee, 1892, seedling of *Duchess*

of Edinburgh $\times$ Caserta, a valuable bedding rose, very free and good, bright glowing red.

Mrs. Robert Garrett, 1896, seedling of Mme. C. Testout $\times$ Sombreuil, pale pink, very large flower and very free—a noble rose.

White Cochet, 1896, sport from Maman Cochet, and one of the most valuable roses ever introduced for summer use.

The following were introduced by John N. May, of Summit, N. J.:

The Bride, 1885, a white sport from Catherine Mermet, and the most beautiful white rose ever introduced.

Brighton Beauty, 1891, bright red, very free flowering; as a bedding rose very desirable.

Mrs. W. C. Whitney, 1894, H. T., beautiful clear deep pink, and the sweetest perfume of any known rose.

Mrs. Pierpont Morgan, 1895, sport from Mme. Cusin, deeper in colour and very much larger, very sweet scented.

Mrs. Oliver Ames, 1902, sport from Mme. Cusin, lighter than Mrs. Pierpont Morgan—a very prettily shaded rose.

Bridesmaid. F. L. Moore, Chatham, N. J., introduced 1892, a sport from C. Mermet, and the most valuable pink rose in commerce to-day.

Climbing Perle, 1890, by John Henderson, Flushing, N. Y., very valuable yellow climber.

Pearl Rivers, 1890, by Dingee & Conard, West Grove, Pa., large ivory white, nice form.

Rainbow, 1891, by John Sievers, San Francisco, Cal., striped white and red, a valuable bedding rose, sport from Papa Gontier.

Vick's Caprice, 1889, by James Vick, of Rochester, N. Y., a sport from Archduchesse d' Autriche, variegated pink and white, large size and free.

Waban, 1891, by E. M. Wood & Co., Natick, Mass., another sport from C. Mermet, but superseded by Bridesmaid.

Maid of Honour, 1899, by Hoffmeister, Cincinnati, O., very similar to the last named; also a sport from same variety.

Admiral Dewey, by John H. Taylor, 1899, a very beautiful flesh-coloured sport of Caroline Testout.

Lady Dorothea, 1898, by Mr. John H. Dunlop, Toronto, Canada, a lovely rose, ground colour similar to Safrano, with delicate pink shading, large size, and very free flowering.

RECENT ROSES

Philip Breitmeyer's Sons in 1903 introduced: *La Detroit*, fiery pink, lighting up well at night. Very strong grower and a large bud.

Urania, 1905, by Walsh, is a hardy ever-blooming rose; vigorous grower, strong, stout stems, colour bright scarlet crimson. Cup-shaped flowers. Seedling from American Beauty.

Wellesley, a Hybrid Tea raised by Alex. Montgomery, 1904. A rose for forcing; rich pink, large flower.

Richmond (Hybrid Tea), raised by the E. G. Hill Co., is a competitor of Liberty; hardy.

Arcadia and *Babette* are Wichuraiana hybrids of Walsh, quite new. The former, remarkable in the double crimson scarlet varieties, and the latter a double rose-coloured variety of the Rambler type.

Doctor Van Fleet, of Little Silver, N. J., is credited with these:

Ruby Queen, Wichuraiana $\times$ Queen Scarlet, vigorous, hardy, bright, shining foliage; flowers quite double, three inches across, bright ruby red with clear white centre (1897).



Rosa setigera, one of the native species, is well adapted for the wild garden.
It is one of the parents of the Prairie Roses

May Queen, Wichuraiana $\times$ Mme. Degraw. Very vigorous, canes ten to twenty feet long, flowers very large and double; clear bright pink (1897).

Pearl Queen, Wichuraiana $\times$ Mme. Degraw. Vigorous grower, long canes and large foliage; flowers large and very double; pure white with blush centre (1897).

Clara Barton, Clothilde Soupert $\times$ American Beauty. Very dwarf, ever-blooming; flowers three and one-half inches across, very double and perfect, highly perfumed, each bloom set in a perfect rosette of green leaves (1898).

New Century, Clothilde Soupert $\times$ R. rugosa alba. Entirely hardy, fine rugosa foliage; flowers three to four inches across, very double, clear light pink with bright red centre, borne in clusters throughout summer; very fragrant (1902).

Sir Thomas Lipton, Clothilde Soupert $\times$ R. rugosa alba. Similar to New Century but longer foliage; flowers very double, pure white and exceedingly fragrant. Opens out flat like a camellia (1904).

Magnafrano, Safrano $\times$ Magna Charta. Vigorous and constant blooming; flowers on long stems, four to five inches across, double

and perfect; fine buds, bright rich crimson with scarlet shade. A magnificent forcing rose (1898).

Philadelphia, Crimson Rambler $\times$ Victor Hugo. A duplicate of Crimson Rambler but rather more stocky in growth; flowers larger, more double, brighter crimson, ten days earlier, and better finished in every way. Foliage more resistant to disease; forces splendidly. Will probably supersede its parent in time (1903).

Of these last roses it is not possible to do more than accord a mere mention, as their actual merits are not yet determined. There have been a number of other roses raised in America, even named and introduced to commerce, but they as quickly passed away. These have been ignored in the present list; the object being rather to demonstrate what has really been achieved by the American rose growers. Now, much more will undoubtedly be done in the future, especially along two lines, namely: (1) Forcing varieties for cut flowers under glass in winter, and (2) hardy garden roses of the modern types, and other than the Hybrid Perpetual, Hybrid Tea, Noisette and Tea groups.

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